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A MONOGRAPH

OF THE

HIRUNDINIDÆ

OR

FAMILY OF SWALLOWS.

BY

R. BOWDLER SHARPE, LL.D., F.L.S., F.Z.S., ETC.,

DEPARTMENT OF ZOOLOGY, BRITISH MUSEUM;

HOLDER OF THE GOLD MEDAL FOR SCIENCE FROM H.I.M. THE EMPEROR OF AUSTRIA;
M.A. (HON.) BATES COLLEGE, U.S.A.; HON. MEMBER OF THE NEW-ZEALAND INSTITUTE;
FOREIGN MEMBER OF THE ROYAL ACADEMY OF SCIENCES OF LISBON; HON. MEMBER OF THE ROYAL ZOOLOGICAL SOCIETY
('NATURA ARTIS MAGISTRA') OF AMSTERDAM; FOREIGN MEMBER OF THE AMERICAN ORNITHOLOGISTS' UNION;
MEMBER OF THE ROYAL SOCIETY OF NATURALISTS OF MOSCOW; FOREIGN MEMBER OF THE ZOOLOGICAL SOCIETY OF FRANCE;
MEMBER OF THE BRITISH ORNITHOLOGISTS' UNION, ETC. ETC.;

AND

CLAUDE W. WYATT,

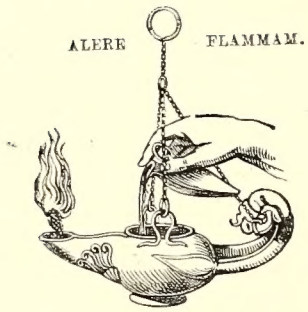
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PREFACE.

For the convenience of binding this work we have divided it into two volumes, but it was originally written with the idea of forming a single volume only. The unexpected growth of the material at our disposal and the discovery of new species have caused the work to extend far beyond the limits originally proposed by us, and therefore the division of the volume into two portions may be found more convenient.

The paging, however, is consecutive, as is also the numbering of the Plates, throughout both of the proposed volumes, as the numbering of the Plates had been settled before the idea of a subdivision of the work occurred to us.

It remains only to thank the many friends who have interested themselves in our labours, and to assure them that the long delay in the completion of the volumes has been caused by the pressure of official work, and also by a desire to make the book as complete a 'Monograph' as was possible. Thus great attention has been devoted to the migration and geographical distribution of the interesting birds of which the volumes treat, and we hope that the introduction of the "Tables of Geographical Distribution," with the symbols agreed upon by the "Second International Congress" at Budapest, will be found instructive, as well as the illustration, by means of coloured maps, of the range of each species.

To our excellent printers, Messrs. Taylor and Francis, we owe our heartiest acknowledgments for the care and attention they have shown. The colouring of the Plates has been executed by Miss Bertha Sharpe and Miss Dora Sharpe, with the occasional help of their sisters Emily and Eva. In the early parts they were assisted by Miss Florence Wilson.

R. BOWDLER SHARPE.
CLAUDE W. WYATT.

August 3, 1894.

SEARCY

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INTRODUCTION.

The Swallows appear to us to be such a well-marked and isolated Family of Passeres, that, in the absence of any detailed account of their anatomy and general structure, which, so far as we know, has not been attempted, there remains little for us to say. By Linnæus and the earlier writers the Swallows were united with the Swifts and all were placed in the genus *Hirundo*. Then in course of time they were recognized as a separate Family, but they were not allowed to escape from their ancient entanglement, and, side by side with the Swifts, they flourished as members of the wide-gaping birds, or "Fissirostres." When the "rostral" system became somewhat exploded, they were ruthlessly separated from their former companions, until now, in due course of re-action, they seem to be recognized as Passerine Birds of a somewhat Cypseline tendency, or perhaps, one might more truly say, the Swifts are Cypseline Birds with a Hirundinine tendency. For the nine years in which this book has been in publication, we entertained the hope that some competent Anatomist would enact such a comparison of the characters of the two Families that we should have been able to summarize the results, and tell our readers exactly how the Swallows may be differentiated from the Swifts in every point of structure. In default of this much-needed exhaustive essay from our more expert brethren, we venture to define the characters of the *Hirundinidæ* as follows:—

A. Passerine Birds with nine primary quills.

B. Spinal feather-tract bifurcated.

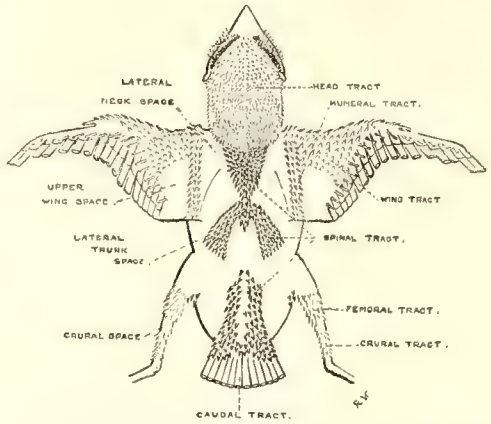
C. A single moult in the year, executed, so far as we know from the migratory species, during their residence in the winter home *.

No Passerine Birds, we believe, present this triple combination of characters, but further information is, of course, desirable.

In 1891, in the 'Catalogue of Osteological Specimens in the Museum of the Royal College of Surgeons,' we placed the *Hirundinidæ* at the end of the series of "Passeres

* It is extremely important to know whether the species which are resident in restricted areas follow the rule of the migratory species, and have but a single moult.

Normales," and in our 'Classification of Birds' we further separated them from the ordinary Perching Birds or Passeriformes (Review Classif. B. p. 89, pl. xi.), placing them at the end of the series, and illustrating their position in the natural system as Passerine Birds *without any very close allies*. We have seen no reason to depart from this conclusion, and until the study of the anatomy, style of moult, and other features



Dorsal view of *Hirundo rustica*, to show the pterylosis, with the spinal feather-tract forked on the lower back. (From the 'Catalogue of Osteological Specimens in the Royal College of Surgeons,' by the kind permission of the President and Council.)

of certain Muscicapine genera—such as *Artomyias* and *Hemichelidon*—tend to bridge the gap, we shall continue to regard the *Hirundinidæ* as peculiar Passerine Birds, standing well apart from the rest of the existing *Passeriformes*.

The *Hirundinidæ* were divided by us in 1870 into two Subfamilies—*Hirundininæ* (True Swallows) and *Psalidoprocninæ* (Rough-winged Swallows).

The Swallows are represented by twelve genera, which might almost be characterized by the peculiarities of their nesting-habits as follows :—

Subfamily I. *HIRUNDININÆ.*

Genus 1. CHELIDON.

Nest. Of mud-nodules, entirely constructed by the birds themselves, lined with grass, feathers, &c., and fixed against the wall of a house or cliff.

Eggs. Pure white.

Genus 2. COTILE.

Nest. A ragged structure of grass, &c., lined with feathers, placed in the hole of a bank.

Eggs. Pure white.

Genus 3. BIBLIS.

Nest. Of mud, placed against a rock or wall of a building.

Eggs. White, with rufous or brown spots.

Genus 4. TACHYCINETA.

Nest. In holes of trees or stumps, more rarely in holes of cliffs.

Eggs. Pure white.

Genus 5. PHEDINA.

Nest. In holes of caves or rocks.

Eggs. White, with rufous or brown spots.

Genus 6. HIRUNDO.

Nest. Of mud, straws, grass, &c., lined with feathers, in barns or on beams of buildings, more rarely against walls or cliffs.

Eggs. White, with reddish spots.

The above characteristics belong to the True Swallows (*Hirundo*) only, and it is quite possible that the future systematist will sub-divide our genus *Hirundo*.

There would be some justification for this sub-division. *Hirundo dimidiata* is said to lay white eggs, like *Tachycineta*. *Hirundo nigrita* nests in tree-stumps in rivers like some species of *Tachycineta*, but lays spotted eggs. The Mosque-Swallows, have rufous rumps, build bottle-shaped nests, often without any lining, and lay pure white eggs. If *Biblis* is to be separated from *Cotile*, then *Hirundo* will also be broken up into genera; but this separation can hardly be attempted before the method of nidification in the case of every species is known; and this knowledge is, at present, wanting.

Genus 7. CHERAMŒCA.

Nest. Of grass or leaves, in the hole of a bank or burrow.

Eggs. Pure white.

Genus 8. PROGNE.

Nest. Of grass, &c., lined with feathers, in the hole of a tree or wall, cliff or burrow

Eggs. Pure white.

Genus 9. ATTICORA.

Nest. Of grass, in the hole of a bank or under eaves.

Eggs. Pure white.

Genus 10. PETROCHELIDON.

Nest. Bottle-shaped.

Eggs. White, spotted with rufous or brown.

Two species afford an exception. *P. nigricans* is apparently a true *Petrochelidon* in form and style of colour; but it breeds in holes of trees, and makes a nest of straw and feathers. It will probably be necessary to separate these Tree-building Swallows from the Cliff-building species, so as to include the two species in *Hylochelidon*, viz., *H. nigricans* and *H. timoriensis*.

Subfamily II. *PSALIDOPROCNINÆ.*

Genus 11. PSALIDOPROCNE.

These Rough-winged Swallows of Africa are very Cypseline in their appearance and ways, and lay two white eggs. Mr. Jackson found *P. orientalis* breeding in a cave, somewhat after the manner of a *Collocalia*. *P. pristoptera* breeds in holes in the sides of ravines.

Genus 12. STELGIDOPTERYX.

The American Rough-winged Swallows, on the other hand, build in holes of banks, like Sand-Martins, and, like the latter, lay several white eggs.

GEOGRAPHICAL DISTRIBUTION.

We have endeavoured in the present work, by means of the Maps and Tables of Geographical Distribution, to illustrate in a concise manner the range of the Swallows at the present day. Should the results appear incomplete to any Ornithological student, we can only recommend him to make a similar essay, and he will speedily find how intricate and how difficult of demonstration is this branch of Ornithological Science. It will be impossible to obtain definite results until the habits and migrations of every species are studied in every country by competent observers, and this is far from being the case with the Swallows.

Taking first the two principal divisions of the World, we obtain the following results:—

Genera peculiar to the Old World (Palæogæa).

1. Chelidon.
2. Biblis.
3. Phedina.
4. Cheramœca.
5. Psalidoprocne.

Genera peculiar to the New World (Neogæa).

1. Tachycineta.
2. Progne.
3. Atticora.
4. Stelgidopteryx.

Genera found in both Eastern and Western Hemispheres.

1. Cotile.
2. Hirundo.
3. Petrochelidon.

Thus the twelve genera of the Hirundinidæ are accounted for.

Considering, next in order, the six Zoo-Geographical Regions of the World, we have the following results :—

A. Palæarctic Region.

	Peculiar Genera.	Peculiar Species.*
1. Chelidon	0	1
2. Cotile	0	1
3. Biblis	0	0
4. Hirundo	0	5
Total	0	7

B. Ethiopian Region.

1. Chelidon	0	1†
2. Cotile	0	6
3. Biblis	0	3
4. Phedina	1	3
5. Hirundo	0	20
6. Petrochelidon	0	2
7. Psalidoprocne	1	10
Total	2	45

C. Indian Region.

1. Chelidon	0	2
2. Cotile	0	1
3. Biblis	0	1
4. Hirundo	0	5
5. Petrochelidon	0	1
Total	0	10

D. Australian Region.

1. Hirundo	0	2
2. Cheramœca	1	1
3. Petrochelidon	0	3
Total	1	6

* The nesting-area of a species is considered by us to be its true *home*.

† *Chelidon albigena*, a doubtful species, of which little is known.

E. Nearctic Region.

	Peculiar Genera.	Peculiar Species.
1. Tachycineta	0	2
2. Hirundo	0	0
3. Progne	0	2
4. Petrochelidon	0	1
5. Stelgidopteryx	0	1
Total	0	6

F. Neotropical Region.

1. Tachycineta	0	5
2. Hirundo	0	2
3. Progne	0	6*
4. Atticora	1	7
5. Petrochelidon	0	3
6. Stelgidopteryx	0	2
Total	1	25

The total number of species of Swallows is 109, divided under the following heads :—

	Species.
1. Chelidon	6
2. Cotile	9
3. Biblis	6
4. Tachycineta	7
5. Phedina	3
6. Hirundo	39
7. Cheramœca	1
8. Progne	8
9. Atticora	7
10. Petrochelidon	10
11. Psalidoprocne	10
12. Stelgidopteryx	3
	109

* *Progne purpurea* is treated as a purely Nearctic species, though it is said to breed within Neotropical limits.

The species are distributed as follows:—

	Palæarctic Region.	Ethiopian Region.	Indian Region.	Australian Region.	Nearctic Region.	Neotropical Region.	Total.
1. Chelidon	1	1	2	0	0	0	4
2. Cotile	1	6	1	0	0	0	8
3. Biblis	0	3	1	0	0	0	4
4. Tachycineta	0	0	0	0	2	5	7
5. Phedina	0	3	0	0	0	0	3
6. Hirundo	5	20	5	2	0	2	34
7. Cheramœca	0	0	0	1	0	0	1
8. Progne	0	0	0	0	2	6	8
9. Atticora	0	0	0	0	0	7	7
10. Petrochelidon	0	2	1	3	1	3	10
11. Psalidoprocne	0	10	0	0	0	0	10
12. Stelgidopteryx	0	0	0	0	1	2	3
	7	45	10	6	6	25	99

There remain, therefore, but ten species to be accounted for, which cannot be tabulated as strictly peculiar to any one of the six regions. They are as follows:—

1. Chelidon . . . . . 1. *C. urbica*; 2. *C. lagopus*.
2. Cotile . . . . . 1. *C. riparia*.
3. Biblis . . . . . 1. *B. rupestris*; 2. *B. obsoleta*.
4. Hirundo . . . . . 1. *H. nipalensis*; 2. *H. rufula*; 3. *H. smithii*; 4. *H. javanica*; 5. *H. erythrogastra*.

Thus *Chelidon urbica* and *C. lagopus* are Palæarctic and Indian. *Cotile riparia* is Palæarctic and Nearctic. *Biblis rupestris* is Palæarctic, Ethiopian, and Indian; *B. obsoleta* is Palæarctic and Ethiopian. *Hirundo nipalensis* is Palæarctic and Indian; *H. rufula* is Palæarctic, Ethiopian, and Indian; *H. smithii* is Ethiopian and Indian; *H. javanica* is Australian and Indian; and *H. erythrogastra* is Palæarctic and Nearctic. The 109 species are thus fully accounted for.

The twelve genera have the following distribution, four being peculiar to a distinct region:—

Palæarctic Region.
Ethiopian Region . . . . . Two peculiar, viz. *Phedina* and *Psalidoprocne*.
Indian Region.
Australian Region . . . . . One peculiar, viz. *Cheramœca*.
Nearctic Region.
Neotropical Region . . . . . One peculiar, viz. *Atticora*.

Their range is summarized as follows:—

1. *Chelidon*	Palæarctic, Ethiopian, and Indian.
2. *Cotile*	Palæarctic, Ethiopian, Indian, and Nearctic.
3. *Biblis*	Palæarctic, Ethiopian, and Indian.
4. *Tachycineta*	Nearctic and Neotropical.
5. *Phedina*	Ethiopian.
6. *Hirundo*	Palæarctic, Ethiopian, Indian, Australian, Nearctic, and Neotropical.
7. *Cheramœca*	Australian.
8. *Progne*	Nearctic and Neotropical.
9. *Atticora*	Neotropical.
10. *Petrochelidon*	Ethiopian, Indian, Australian, Nearctic, and Neotropical.
11. *Psalidoprocne*	Ethiopian.
12. *Stelgidopteryx*	Nearctic and Neotropical.

From the foregoing Tables it becomes evident that, as regards the Hirundinidæ, the Ethiopian Region is the richest in species, with 45 peculiar species and 2 peculiar genera. The Neotropical Region follows, with 25 peculiar species and 1 genus. Next in order is the Indian Region, with 10 species, but no genus peculiar to its area. Then the Australian Region with 6 species and 1 genus, followed by the Palæarctic and Nearctic Regions, with 7 and 6 species respectively, but neither possessing a peculiar genus.

Some slight modification in these results will be obtained, if *Cecropis* be considered distinct from *Hirundo*, if *Hirundo dimidiata* be separated off generically, and *Hylochelidon* be reckoned generically distinct from *Petrochelidon*, all of which changes are distinctly feasible (*vide anteà*, pp. xiii, xiv).

In 1893 we published a paper "On the Zoo-Geographical Areas of the World, illustrating the Distribution of Birds" (Natural Science, iii. pp. 100–108), in which we endeavoured to summarize the sub-divisions into which the six Zoological Regions of the Globe have from time to time been partitioned by zoologists. We therefore now proceed to discuss the validity of these divisions from the standpoint of the *Hirundinidæ*, but it is unlikely that any striking results can be obtained in a family so susceptible to modification of habits as the Swallows are. Not only are they migratory within limited, as well as large, areas, but, as in the case of *Progne*, they can be induced to change their

natural mode of nidification and adopt an artificial one—their inclination, therefore, being to follow in the footsteps of civilization, which guarantees them protection during the breeding-season, and even provides them with nesting-sites.

A. PALÆARCTIC REGION.

A^1. Arctic Sub-Region.

Peculiar Genera :—0.

Peculiar Species :—0.

Species which breed within its limits :—1. *Chelidon lagopus*. 2. *Cotile riparia*.

Species which are met with within its limits, but are not known to breed :—1. *Chelidon urbica*. 2. *Hirundo rustica*.

A^2. Eurasian Sub-Region.

α. *European Province.*

Peculiar Genera :—0.

Peculiar Species :—0.

Species which breed within its limits :—1. *Chelidon urbica*. 2. *Cotile riparia*. 3. *Hirundo rustica*.

β. *Central Siberian Province.*

Peculiar Genera :—0.

Peculiar Species :—1. *Chelidon lagopus* (virtually replaces *C. urbica* of the European Province, though it also breeds just within the Arctic Province and elsewhere).

Species which breed within its limits :—1. *Chelidon lagopus*. 2. *Cotile riparia*. 3. *Hirundo rustica*.

γ. *East Siberian Province.*

Peculiar Genera :—0.

Peculiar Species :—0.

Species which breed within its limits :—1. *Chelidon lagopus*. 2. *Cotile riparia*. 3. *Hirundo gutturalis* (replacing *H. rustica*). 4. *H. tytleri*. 5. *H. erythrogastra* (only known breeding-area in the Old World).

A^3. Manchurian Sub-Region.

Peculiar Genera :—0.

Peculiar Species :—1. *Chelidon dasypus*.

Species which breed within its limits :—1. *Chelidon dasypus*. 2. *C. lagopus*. 3. *Cotile riparia*. 4. *Hirundo gutturalis*. 5. *H. tytleri*. 6. *H. daurica*. 7. *H. nipalensis*.

A[4]. Mediterraneo-Asiatic Sub-Region.

α. Mediterranean Province.

Peculiar Genera :—0.

Peculiar Species :—1. *Hirundo savignii.*

Species which breed within its limits :—1. *Chelidon urbica.* 2. *Cotile riparia.* 3. *Biblis rupestris.* 4. *Hirundo rustica.* 5. *H. savignii.* 6. *H. rufula.*

N.B.—*Biblis rupestris* and *Hirundo rufula* are characteristic of this Province, as far as the Western Palæarctic Region is concerned.

β. Mediterraneo-Persic Province.

Peculiar Genera :—0.

Peculiar Species :—1. *Cotile diluta.*

Species which breed within its limits :—1. *Chelidon urbica.* 2. *C. lagopus.* 3. *Cotile riparia.* 4. *C. diluta.* 5. *Biblis obsoleta.* 6. *Hirundo rustica.* 7. *H. rufula.*

γ. Mongolian Province.

Peculiar Genera :—0.

Peculiar Species : —0.

Species which breed within its limits :—1. *Chelidon urbica.* 2. *C. lagopus.* 3. *Cotile riparia.* 4. *Biblis rupestris.* 5. *Hirundo gutturalis.* 6. *H. daurica.*

A[5]. Himalo-Caucasian Sub-Region.

Peculiar Genera :—0.

Peculiar Species :—0.

Species which breed within its limits :—1. *Chelidon urbica.* 2. *Biblis rupestris.* 3. *Hirundo rustica.* 4. *H. rufula.*

B. ETHIOPIAN REGION.

B[1]. Saharan Sub-Region.

Peculiar Genera :—0.

Peculiar Species :—0.

Species which are known to breed within its limits :—0.

This negative result, however, does not prove that no species of Swallow breed within the limits of the Saharan Sub-Region, the fact being that we know little or nothing of the avifauna of this vast area. Undoubtedly Swallows will be found nesting within its borders, albeit, for our present purposes, no statistics are available.

B[2]. Sudanese Sub-Region.

Peculiar Genera :—0.

Peculiar Species :—? 1. *Chelidon albigena* *. 2. *Cotile shelleyi*. 3. *Hirundo domicella*.

Species supposed to breed within its limits :—? 1. *Cotile cincta*. 2. *C. minor*. 3. *Biblis obsoleta*. 4. *Hirundo æthiopica*. 5. *H. lucida* †. 6. *H. leucosoma*. 7. *H. smithii*. 8. *H. domicella*. 9. *H. senegalensis*.

B[3]. West-African Sub-Region.

Peculiar Genera :—0 ‡.

Peculiar Species :—1. *Cotile congica*. 2. *Phedina brazzæ* §. 3. *Hirundo lucida*. 4. *H. leucosoma*. 5. *H. nigrita*. 6. *H. gordoni*. 7. *Psalidoprocne obscura*. 8. *P. nitens*. 9. *P. petiti*.

Species which occur and are supposed to breed within its limits :—? 1. *Cotile cincta*. 2. *C. congica*. 3. ? *Hirundo angolensis*. 4. *H. lucida*. 5. *H. æthiopica*. 6. *H. leucosoma*. 7. *H. nigrita*. 8. *H. smithii*. 9. *H. griseopyga*. 10. *H. puella*. 11. *H. gordoni*. 12. *H. senegalensis*. 13. *H. monteiri*. 14. *Psalidoprocne obscura*. 15. *P. nitens*. 16. *P. petiti*.

B[4]. Abyssinian Sub-Region.

Peculiar Genera :—0.

Peculiar Species :—1. ? *Chelidon albigena*. 2. *Hirundo melanocrissa*. 3. *Psalidoprocne pristoptera*.

Species known, or supposed, to breed within its limits :—1. *Cotile cincta*. 2. *C. minor*. 3. *Biblis rupestris*. 4. *B. obsoleta*. 5. ? *B. rufigula*. 6. *Hirundo æthiopica*. 7. *H. smithii*. 8. *H. puella*. 9. *H. rufula*. 10. *H. melanocrissa*. 11. *H. senegalensis*. 12. *Psalidoprocne pristoptera*.

B[5]. East-African Sub-Region.

Peculiar Genera :—0.

Peculiar Species :—1. *Psalidoprocne albiceps* ||.

Species known, or supposed, to breed within its limits :—1. ? *Cotile minor*. 2. ? *Biblis rufigula*. 3. *Hirundo æthiopica*. 4. *H. smithii*. 5. *H. griseopyga*. 6. *H. puella*. 7. *H. semirufa*. 8. *H. monteiri*. 9. *Psalidoprocne albiceps*.

B[6]. South-African Sub-Region.

Peculiar Genera :—0.

Peculiar Species :—1. *Cotile paludicola*. 2. *Biblis fuligula*. 3. *B. anderssoni*. 4. *Hirundo dimidiata*. 5. *H. albigularis*. 6. *H. atrocærulea*. 7. *H. nigrorufa*. 8. *H. cucullata*. 9. *Petrochelidon rufigula*. 10. *P. spilodera*. 11. *Psalidoprocne holomelæna*.

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* As already stated, this species is of such very doubtful value, that it cannot yet be seriously entertained as a factor in the geographical distribution of the genus *Chelidon*.

† This species ought to have appeared in our Table under the Sudanese column.

‡ *Waldenia*, for the reasons stated (*suprà*, p. xiii), may have to be restored to its position as a distinct genus, in which case it will be a peculiar West-African form, *Waldenia nigrita*.

§ May prove to be distinct from *Phedina*.

|| This species may be found to belong to the Cameronian Sub-Region only.

Species known, or supposed, to breed within its limits :—1. *Cotile cincta*. 2. *C. paludicola*. 3. *Biblis fuligula*. 4. *B. anderssoni*. 5. *Hirundo angolensis*. 6. *H. albigularis*. 7. *H. atrocærulea*. 8. *H. nigrorufa*. 9. *H. smithii*. 10. *H. griseopyga*. 11. *H. cucullata*. 12. *H. puella*. 13. *H. semirufa*. 14. *H. monteiri*. 15. *Petrochelidon rufigula*. 16. *P. spilodera*. 17. *Psalidoprocne holomelæna*.

α. Cape Province.

Peculiar Genera :—0.

Peculiar Species :—1. *Biblis fuligula*.

Species known, or supposed, to breed within its limits :—1. *Cotile cincta*. 2. *C. paludicola*. 3. *Biblis fuligula*. 4. *Hirundo albigularis*. 5. *H. dimidiata*. 6. *H. cucullata*. 7. *H. puella*. 8. *Petrochelidon spilodera*.

β. Natalese Province.

Peculiar Genera :—0.

Peculiar Species :—1. *Hirundo atrocærulea*.

Species known, or supposed, to breed within its limits :—1. *Cotile cincta*. 2. *C. paludicola*. 3. *Hirundo albigularis*. 4. *H. dimidiata*. 5. *H. atrocærulea*. 6. *H. smithii*. 7. *H. griseopyga*. 8. *H. cucullata*. 9. *H. puella*. 10. *Petrochelidon spilodera*.

B[7]. Cameronian Sub-Region.

Peculiar Genera :—0.

Peculiar Species :—1. *Hirundo arcticincta*. 2. *H. emini*. 3. *Psalidoprocne chalybea*. 4. *P. antinorii*. 5. *P. fuliginosa*.

Species known, or supposed, to breed within its limits :—1. *Hirundo arcticincta*. 2. *H. emini*. 3. ? *H. senegalensis*. 4. *Psalidoprocne chalybea*. 5. *P. orientalis*. 6. *P. antinorii*. 7. *P. fuliginosa*.

B[8]. Lemurian Sub-Region.

Peculiar Genera :—0 *.

Peculiar Species :—1. *Cotile cowani*. 2. *Phedina borbonica*. 3. *P. madagascariensis*.

Species known to breed within its limits :—1. *Cotile cowani*. 2. *Phedina borbonica*. 3. *P. madagascariensis*.

Remarks.—The resident species of Swallows confirm the validity of the natural regions of the Ethiopian Region, as proposed by us in 1893, but our knowledge on several points is extremely unsatisfactory. Of the great Saharan Sub-Region we know next to nothing, and of the Sudanese Sub-Region very little. That there is a natural connection between the avifauna of a portion of Senegambia and of North-eastern Africa

* If *Phedina brazzæ* from the Congo turns out to be generically distinct, then the genus *Phedina* will be a typical Lemurian genus.

is certain, *e. g.* the occurrence in both areas of *Coracias abyssinica* and other species; but the exact limits between the Senegambian Province of the Sudanese Sub-Region and the Forest or West-African Sub-Region have yet to be delineated, and the Swallows do not help us much. The only work on the fauna of Senegambia is by M. de Rochebrune; but there are so many statements in this work which are absolutely at variance with the experience of other collectors in the province, that his conclusions have been received with considerable hesitation. Nevertheless there are one or two Swallows of which specimens have been received from Senegambia by European museums, which are otherwise known as inhabitants of the West-African Sub-Region, such as *Hirundo leucosoma*; and therefore further information is necessary as to the exact distribution of these otherwise purely West-Coast forms in Senegambia.

Our knowledge of the Zoo-Geographical Sub-Regions of Africa is in its infancy, and there is much to be done in the definition of the boundaries of the Abyssinian and East-African Sub-Regions. In fact, if *Psalidoprocne albiceps* be found only at such elevations as to warrant its inclusion in our Cameronian Sub-Region, East Africa will possess no peculiar species of Swallow.

The only species which confirms our recognition of a Cape Province of the South-African Sub-Region is *Biblis fuligula*; but, on the other hand, the presence of four peculiar species in South-western Africa, viz. *Biblis anderssoni*, *Hirundo angolensis*, *Hirundo nigrorufa*, and *Petrochelidon rufigula*, may, in conjunction with numbers of other peculiar species of birds, enforce the recognition of another natural province of the South-African Fauna. As, however, its component species have not yet been statistically compared with those of Zambesia, we will not at present confer a name upon the western province, as it is possible that it may be found to extend towards the east in an unexpected degree.

Our remarks on the zoo-geographical districts of Africa must be compared with those of Dr. Reichenow in the 'Jahrbuch der Hamburgischen wissenschaftlichen Anstalten,' vol. x. pp. 3, 4.

C. INDIAN REGION.

C[1]. Indian Peninsular Sub-Region.

Peculiar Genera:—0.

Peculiar Species:—1. *Biblis concolor*. 2. *Hirundo erythropygia*. 3. *Petrochelidon fluvicola*.

Species which are known to breed within its limits:—1. *Chelidon urbica*. 2. *Cotile sinensis*. 3. *Biblis concolor*. 4. *Hirundo smithii*. 5. *H. erythropygia*. 6. *Petrochelidon fluvicola*.

C[2]. Indo-Malayan Sub-Region.

Peculiar Genera :—0.

Peculiar Species :—0.

Species which are known to breed within its limits :—1. *Cotile sinensis.* 2. *Hirundo javanica.* 3. *H. smithii.* 4. *H. nipalensis.* 5. *H. striolata.*

C[3]. Indo-Chinese Sub-Region.

Peculiar Genera :—0.

Peculiar Species :—1. *Hirundo namiyei.*

Species known, or supposed, to breed within its limits :—1. *Cotile sinensis.* 2. *Hirundo namiyei.*

C[4]. Himalo-Malayan Sub-Region.

Peculiar Genera :—0.

Peculiar Species :—1. *Chelidon nipalensis.* 2. *Hirundo hyperythra.* 3. *H. badia.*

Species which are known, or supposed, to breed within its limits :—1. *Chelidon urbica.* 2. *C. nipalensis.* 3. *Biblis rupestris.* 4. ? *B. concolor.* 5. *Hirundo rustica.* 6. *H. smithii.* 7. *H. hyperythra.* 8. *H. badia.*

C[5]. Himalo-Chinese Sub-Region.

Peculiar Genera :—0.

Peculiar Species :—1. *Chelidon cashmiriensis.*

Species known, or supposed, to breed within its limits :—1. *Chelidon cashmiriensis.* 2. *C. lagopus.*

D. AUSTRALIAN REGION.

D[1]. Celebean Sub-Region.

Peculiar Genera :—0.

Peculiar Species :—0.

Species known, or supposed, to breed within its limits :—1. *Hirundo javanica.*

D[2]. Moluccan Sub-Region.

Peculiar Genera :—0.

Peculiar Species :—1. *Petrochelidon timoriensis.*

Species known, or supposed, to breed within its limits :—1. *Hirundo javanica.* 2. *Petrochelidon timoriensis* *.

* By mistake, this species has been entered under the Papuan Sub-Region (p. 599), but it should rightly be considered a Moluccan species.

D[3]. Papuan Sub-Region.

Peculiar Genera :—0.

Peculiar Species :—0.

Species known, or supposed, to breed within its limits :—1. *Hirundo javanica*. 2. *Petrochelidon nigricans*.

D[4]. Australian Sub-Region.

Peculiar Genera :—1. *Cheramœca*.

Peculiar Species :—1. *Hirundo neoxena*. 2. *Cheramœca leucosternum*.

Species known to breed within its limits :—1. *Hirundo neoxena*. 2. *Cheramœca leucosternum*. 3. *Petrochelidon nigricans*.

D[5]. New-Zealand Sub-Region.

Peculiar Genera :—0.

Peculiar Species :—0.

Species known to breed within its limits :—0.

D[6]. Fijian Sub-Region.

Peculiar Genera :—0.

Peculiar Species :—1. *Hirundo tahitica* *.

Species known to breed within its limits :—1. *Hirundo tahitica*.

D[7]. Hawaiian Sub-Region.

Peculiar Genera :—0.

Peculiar Species :—0.

Species known to breed within its limits :—0.

E. NEARCTIC REGION †.

E[1]. Arctic Sub-Region.

α. Arctic Province.

Peculiar Genera :—0.

Peculiar Species :—0.

Species known, or supposed, to breed within its limits :—1. *Hirundo erythrogastra*.

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* Although occurring just within the confines of the Papuan Sub-Region, this species may virtually be considered one of the characteristic species of the Fijian Sub-Region.

† In the paper above referred to we followed, in the main, the divisions of the Nearctic Area proposed by Dr. J. A. Allen in his celebrated essays on the Geographical Distribution of North-American Mammals (Bull. Amer. Mus. iv. pp. 199–244) and Birds ('Auk,' 1893, pp. 97–150). In our endeavour to bring the Palæarctic "Sub-Regions" into equivalent rank with the Nearctic, we bestowed upon those of the latter a higher rank than that claimed for

β. *Alaskan Arctic Province.*

Peculiar Genera :—0.

Peculiar Species :—0.

Species known to breed within its limits :—1. *Tachycineta bicolor.* 2. *Hirundo erythrogastra.* 3. *Petrochelidon pyrrhonota.*

E². Cold Temperate Sub-Region.

α. *Hudsonian Province.*

Peculiar Genera :—0.

Peculiar Species :—0.

Species known to breed within its limits :—1. *Cotile riparia.* 2. *Tachycineta bicolor.* 3. *Hirundo erythrogastra.* 4. *Progne purpurea.* 5. *Petrochelidon pyrrhonota.*

β. *Canadian Province.*

Peculiar Genera :—0.

Peculiar Species :—0.

Species known to breed within its limits :—1. *Cotile riparia.* 2. *Tachycineta bicolor.* 3. *Hirundo erythrogastra.* 4. *Progne purpurea.* 5. *Petrochelidon pyrrhonota.*

γ. *Sitkan Province.*

Peculiar Genera :—0.

Peculiar Species :—0.

Species known to breed within its limits :—1. *Tachycineta bicolor.* 2. *Hirundo erythrogastra.*

δ. *Aleutian Province.*

Peculiar Genera :—0.

Peculiar Species :—0.

Species known to breed within its limits :—1. *Hirundo erythrogastra.*

E³. Warm Temperate Sub-Region.

α. *Humid Province.*

α¹. *Appalachian Sub-Province.*

Peculiar Genera :—0.

Peculiar Species :—0.

Species known to breed within its limits :—1. *Tachycineta bicolor.* 2. *Hirundo erythrogastra.* 3. *Progne purpurea.* 4. *Petrochelidon pyrrhonota.* 5. *Stelgidopteryx serripennis.*

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them by Dr. Allen. When our knowledge of the zoo-geographical divisions of the Old World equals that of our American brethren as regards those of their own country, it will probably be found that the position of "Sub-Regions," which we have upheld, will be found not to be justified by exact statistics, and therefore many of these "Sub-Regions" will have to be degraded to the rank of "Provinces" and "Sub-Provinces." In the Tables of Geographical Distribution we have followed Dr. Allen's sub-divisions of the Nearctic Avifauna more closely than in our essay on the "Zoo-Geographical Areas" of the World.

α^2. Austro-Riparian Sub-Province.

Peculiar Genera:—0.

Peculiar Species:—0.

Species known to breed within its limits:—1. *Progne purpurea.* 2. *Petrochelidon pyrrhonota.* 3. *Stelgidopteryx serripennis.*

β. Arid Province.

(Peculiar Species:—1. *Tachycineta thalassinus.* 2. *Progne hesperia.*)

β^1. Campestrian Sub-Province.

Peculiar Genera:—0.

Peculiar Species:—1. *Tachycineta thalassinus.*

Species known to breed within its limits:—1. *Tachycineta bicolor.* 2. *Hirundo erythrogastra.* 3. *Progne purpurea.* 4. *P. hesperia.* 5. *Petrochelidon pyrrhonota.*

β^2. Sonoran Sub-Province.

Peculiar Genera:—0.

Peculiar Species:—0.

Species known to breed within its limits:—1. *Hirundo erythrogastra.* 2. *Progne purpurea.* 3. *P. hesperia.* 4. *Stelgidopteryx serripennis.*

F. NEOTROPICAL REGION.

F^1. Antillean Sub-Region.

Peculiar Genera:—0 *.

Peculiar Species:—1. *Tachycineta cyaneoviridis.* 2. *Hirundo euchrysea.* 3. *H. sclateri.* 4. *Progne dominicensis.* 5. *Petrochelidon fulva* †.

Species known to breed within its limits:—1. *Tachycineta cyaneoviridis.* 2. *Hirundo euchrysea.* 3. *H. sclateri.* 4. *Progne dominicensis.*

F^2. Central-American Sub-Region.

α. Mexican Province.

Peculiar Genera:—0.

Peculiar Species:—0.

Species known, or supposed, to breed within its limits:—1. *Tachycineta albilinea.* 2. *Hirundo erythrogastra.* 3. *Progne chalybea.* 4. *Atticora cyanoleuca.* 5. *Petrochelidon swainsoni.* 6. *P. fulva.*

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* If the Bronze Swallows are separated from true *Hirundo*, then *Calichelidon* becomes a genus peculiar to the Antillean Sub-Region.

† Practically an Antillean species, though it occurs in Yucatan, and is said to breed there.

β. *Isthmian Province.*

Peculiar Genera :—0.

Peculiar Species :—1. *Atticora pileata.*

Species known, or supposed, to breed within its limits :—1. *Tachycineta albilinea.* 2. *Progne chalybea.* 3. *Atticora cyanoleuca.* 4. *A. pileata.* 5. *A. tibialis.* 6. *Stelgidopteryx uropygialis.*

F[3]. Sub-Andean Sub-Region.

Peculiar Genera :—0.

Peculiar Species :—1. *Progne concolor.* 2. *Atticora tibialis.*

Species known, or supposed, to breed within its limits :—1. *Tachycineta albiventris.* ? 2. *T. albilinea.* 3. *Progne concolor.* 4. *P. chalybea.* 5. *P. tapera.* 6. *Atticora fasciata.* 7. *A. tibialis.* 8. *A. cyanoleuca.* 9. *Stelgidopteryx uropygialis.* 10. *S. ruficollis.*

F[4]. Amazonian Sub-Region.

Peculiar Genera :—0.

Peculiar Species :—0.

Species known, or supposed, to breed within its limits :—1. *Tachycineta albiventris.* 2. *Progne chalybea.* 3. *P. tapera.* 4. *Atticora fasciata.* 5. *A. melanoleuca.* 6. *A. cyanoleuca.* 7. *A. fucata.* 8. *Stelgidopteryx ruficollis.*

F[5]. Brazilian Sub-Region.

Peculiar Genera :—0.

Peculiar Species :—1. *Progne domestica.*

Species known, or supposed, to breed within its limits :—1. *Tachycineta albiventris.* 2. *T. leucorrhous.* 3. *Progne domestica.* 4. *P. chalybea.* 5. *P. tapera.* ? 6. *Atticora fasciata.* 7. *A. melanoleuca.* 8. *A. cyanoleuca.* 9. *A. fucata.* 10. *Stelgidopteryx ruficollis.*

F[6]. Patagonian Sub-Region.

Peculiar Genera :—0.

Peculiar Species :—1. *Tachycineta meyeni* *. 2. *Progne furcata.* 3. *Atticora cinerea.* 4. *Petrochelidon ruficollaris.*

Species known, or supposed, to breed within its limits :—1. *Tachycineta leucorrhous.* 2. *T. meyeni.* 3. *Progne furcata.* 4. *Atticora cinerea.* 5. *A. cyanoleuca.* 6. *Petrochelidon ruficollaris.*

* The status of this species as a peculiar Patagonian form is modified by the recent discovery of its nesting near Buenos Aires by Mr. A. H. Holland, but it is practically Patagonian.

LITERATURE.

The following we believe to be a tolerably correct account of the principal Literature relating to the *Hirundinidæ*. For an exhaustive list of pamphlets and works bearing on the history of the family, the student is referred to the "Bibliography" published by Professor Elliott Coues, in his 'Birds of the Colorado Valley,' and again in his "Third Instalment of American Ornithological Bibliography" (Bull. U.S. Geol. Surv. v. no. 4, pp. 522–528).

1731. Catesby, Mark. The Natural History of Carolina, Florida, and the Bahama Islands, &c. Folio. Vol. i. London, 1731.

Hirundo purpurea ("Purple Martin") described and figured (p. 51, pl. 51).

——. ——. The same. Vol. ii. App. pp. 1–22, pl. 20.

L'Hirondelle d'Amérique described and figured (p. 8, pl. 8). [=*Chætura pelasgia* (L.).]

1750. Edwards, George. A Natural History of Birds. 4to. London, 1750. Vol. iii. pp. 105–157.

Gives a very bad figure of the "Great American Martin" (pl. 120) "brought from Hudson's Bay by Mr. Isham." [=*Progne purpurea* (L.).]

1760. Brisson, A. D. Ornithologie, ou Méthode contenant la division des Oiseaux en Ordres, Sections, Genres, Espèces et leurs Variétés. A laquelle on a joint une description exacte de chaque Espèce, avec les Citations des Auteurs qui en ont traité, les Noms qu'ils leur ont donnés, ceux que leur ont donnés les différentes Nations, et les Noms vulgaires. Tome ii. 4to. Paris, 1760. Pp. 485–516.

1. L'Hirondelle de cheminée (p. 486).—Described from a specimen in the Reaumur collection. [=*Hirundo rustica*, L.]

Ditto. Var. A. L'Hirondelle blanche (p. 489).—Evidently an albino variety of the Common Swallow.

2. La Petite Hirondelle, ou le Martinet à cul blanc (p. 490).—Described from a specimen in the Reaumur collection. [=*Hirundo urbica* of Linnæus, who, curiously enough, omits all reference to Brisson in his synonymy of this species.]

3. L'Hirondelle de S. Domingue (p. 493).—From the Island of Dominica, whence sent to Reaumur by a M. Chervain. On this description and on D'Aubenton's figure the name of *Hirundo dominicensis* was founded by Gmelin.
4. L'Hirondelle de Cayenne (p. 495).—Described and figured (pl. xlvi. fig. 1) from a specimen sent to Reaumur by M. Verron from Cayenne. From this description and D'Aubenton's figure is derived Gmelin's name of *Hirundo chalybea*.
5. L'Hirondelle du Sénégal (p. 496, pl. xlv. fig. 1).—Described and figured from a specimen sent to Reaumur by M. Adanson. Evidently the Great Mosque-Swallow of Senegal, and it is on this description that Linnæus founded his *Hirundo senegalensis*.
6. L'Hirondelle du Pérou (p. 498), and
7. La Grande Hirondelle du Pérou (p. 498).

   These two species are derived from Feuillée (Journ. Obs. Phys. p 33 [1725]) and were not known to Brisson. We cannot identify the first for certain, but the second seems to be *Atticora cinerea*.
8. L'Hirondelle de la Martinique (p. 499, pl. xlv. fig. 2).—The figure represents a small Spine-tailed Swift, sent to Reaumur by M. Thibault de Chanvalon from the Island of Martinique. It is probably the same bird figured by D'Aubenton under the same name.
9. L'Hirondelle de la Caroline (p. 501).—This description of a Spine-tailed Swift is founded on that of Catesby (App. p. 8, pl. 8). Linnæus named it *Hirundo pelagica* in his 10th edition (*cf.* Hartert, Cat. B. xvi. p. 480), and it is the *Hirundo pelasgia* of his 12th edition (p. 345). He also adds:—

   Conf. Hirundo martinicana, *Briss. Av.* ii. p. 499, t. 45. f. 2.

   The latter bird, which, it must be remembered, was described by Brisson from an actual specimen, is not mentioned by Mr. Hartert in the above-quoted volume, and we are unable to identify it further.
10. L'Hirondelle d'Amérique (p. 502, pl. xlv. fig. 3).—The figure is unrecognizable, but the description is taken from a Cayenne specimen sent to Reaumur by M. Artur. It is the "Tapera" of the Brazilians, as quoted by Sloane, Marcgrave, and others of the old authors, and is the *Hirundo tapera* of Linnæus (p. 345).
11. La Grande Hirondelle d'Espagne (p. 504). [=*Hirundo melba*, Linn. S. N. i. p. 345. *Cf.* Hartert, Cat. B. Brit. Mus. xvi. p. 438.]
12. L'Hirondelle de rivage (p. 506). [=*Hirundo riparia*, Linn. S. N. i. p. 344.]
13. L'Hirondelle de rivage du Sénégal (p. 508, pl. xlv. fig. 4). [=*Hirundo ambrosiaca*, Gm. S. N. i. p. 1021.]—Dr. Sclater has pointed out that this cannot be a Swift, as Brisson, the most conscientious of describers, expressly states that his specimen had *twelve* tail-feathers. It is therefore impossible to define what the species really is. (*Cf.* Finsch & Hartlaub, Vög. Ostafr. p. 132; and Hartert, Cat. B. xvi. p. 463.)
14. L'Hirondelle de rivage de la Cochinchine (p. 510, pl. xlvi. fig. 2 A). [=*Hirundo esculenta*, Linn. S. N. i. p. 343. *Collocalia esculenta* (L.), Hartert, *t. c.* p. 509.]
15. Le Martinet (p. 512). [=*Hirundo apus*, Linn. S. N. i. p. 344; =*Cypselus apus* (L.). *Micropus apus*, Hartert, *t. c.* p. 442.]
16. Le Martinet de S. Domingue (p. 514, pl. xlvi. fig. 3). [=*Hirundo nigra*, Gm. *Cypseloides niger*, Hartert, Cat. B. xvi. p. 494.]
17. Le Martinet de la Caroline (p. 515).—From Catesby's "Purple Martin." [=*Hirundo purpurea*, Linn. S. N. i. p. 345.]

1760. Brisson, A. D. The same. Tome vi. Supplementum Ornithologiæ, pp. 55–58.

L'Hirondelle de la Baye de Hudson (p. 56).—Founded on Edwards's "Great American Martin." Additional references are given to the species mentioned in vol. ii. They consist mostly of quotations from the 10th edition of Linnæus's 'Systema.'

1765–1781. D'Aubenton, Edme Louis. Planches Enluminées d'Histoire Naturelle. Folio. Tome vii. Paris, 1765–1781. [Issued in parts.]

The history of this work is given by Boddaert in 1783. The designer of the plan of issuing this immense series of coloured plates of Birds, of which no less than 1008 were published, was the cousin of the celebrated Professor Louis D'Aubenton, the coadjutor of Buffon. The plates were executed by Martinet, who had also illustrated the work of Brisson. This circumstance will account for the fact that so many of the plates in the 'Planches Enluminées' are mere copies of the figures in the older work of Brisson, the positions being frequently reversed. Boddaert says that the plates appeared in "Cahiers," without any systematic order, and in fact "pêle-mêle"; and without any description except an indication of the name of the bird attached to the foot of each plate according to Brisson's nomenclature, because M. de Buffon kept back the descriptions for his big work, which began to appear in 1770. To accompany D'Aubenton's plates, which were of folio size, a special reproduction of the 'Histoire Naturelle des Oiseaux' was executed, but the names on D'Aubenton's plates were generally changed by Buffon in the text of his own work.

The species figured in the 'Planches Enluminées' (vol. vii.) are the following:—

Plate 543. fig. 1. L'Hirondelle des Cheminées. [=*H. rustica*, L.]

Plate 543. fig. 2. L'Hirondelle de rivage. [=*Cotile riparia* (L.).]

Plate 724. fig. 1. Hirondelle à ventre roux, de Cayenne.—This is a very bad figure of the Chimney-Swallow of America. On this figure Boddaert founded his name of *Hirundo erythrogaster* [p. 44].

Plate 724. fig. 2. Hirondelle à bande blanche sur le ventre, de Cayenne.—This figure is not referred to by Boddaert, but Gmelin's *Hirundo fasciata* [*infrà*, p. xxxix] is founded on this plate and on Latham's description.

Plate 723. fig. 1. Hirondelle brune à collier, du Cap de Bonne-esperance. [=*Cotile cincta* (Bodd.).]

Plate 723. fig. 2. Hirondelle à tête rousse, du Cap de Bonne-esperance. [=*H. cucullata*, Bodd.]

Plate 310. Hirondelle à ventre roux, du Sénégal. [=*Hirundo senegalensis*, Linn.]

Plate 542. fig. 1. Le Grand Martinet. [=*Cypselus apus* (Linn.).]

Plate 542. fig. 2. Le Petit Martinet. [=*Chelidon urbica* (Linn.).]

Plate 725. fig. 1. Martinet de la Louisiane. [=*Cypseloides niger* (Gm.).]

Plate 725. fig. 2. Martinet à collier, de Cayenne. [=*Panyptila cayennensis* (Gm.).]

Plate 545. fig. 1. Hirondelle d'Amérique.—Universally referred to Brisson's *Hirondelle de S. Domingue*, of which it is a bad figure. [=*H. dominicensis*, Gm.]

Plate 545. fig. 2. Hirondelle de Cayenne. [=*Progne chalybea* (Gm.).]

Plate 722. Hirondelle, de la Louisiane. [*Progne purpurea* (L.).]

Plate 546. fig. 1. Hirondelle tachetée, de Cayenne. Not identified.

Plate 546. fig. 2. Hirondelle à ventre blanc, de Cayenne. [=*Tachycineta albiventer* (Bodd.).]

Plate 544. fig. 1. Hirondelle de la Martinique. [=*Chætura acuta* (Gmelin).]

Plate 544. fig. 2. Hirondelle de l'Isle de Bourbon. [=*Hirundo borbonica*, Gmelin.]
Plate 726. fig. 1. Hirondelle à queue pointue, de Cayenne. [=*Chætura spinicauda* (Temm.).]
Plate 726. fig. 2. Hirondelle à queue pointue, de la Louisiane. [=*Chætura poliura* (Temm.).]

1766. Linnæus, C. Systema Naturæ, per Regna Tria Naturæ, secundum Classes, Ordines, Genera, Species, cum characteribus, differentiis, synonymis, locis. I. Holmiæ, 1766. Pp. 532.

The genus *Hirundo* occupies three pages (pp. 343–345). Twelve species were known to Linnæus, of which many were Swifts (*Cypseli*). The species are:—1. *Hirundo rustica* (p. 343); 2. *H. esculenta* (=*Collocalia esculenta*); 3. *H. urbica*; 4. *H. riparia*; 5. *H. purpurea* (*ex* Catesby); 6. *H. apus* (=*Cypselus apus*); 7. *H. subis** (*ex* Edwards, pl. 120)=*Progne purpurea*; 8. *H. senegalensis* (*ex* Brisson, ii. pl. 45. fig. 1); 9. *H. tapera* (*ex* Brisson, pl. 45. fig. 3)=*Progne tapera*; 10. *H. pelasgia* (*ex* Catesby, App. p. 8, pl. 8)=*Chætura pelasgia*; 11. *H. melba* (*ex* Edwards and Brisson)=*Cypselus melba* (L.); and, lastly, 12. *Hirundo pratincola*, the Pratincole. It is curious that Linnæus should have put the Pratincole into the genus *Hirundo*, and a century later Sundevall once more placed it with the *Caprimulgidæ* (*cf.* Av. Meth. Tent. p. 86).

1769. Laxmann, Eric. "*Hirundo daurica*, area temporali rubra, uropygio luteo rufescente." K. Vet.-Akad. Handl. Stockholm, xxx. p. 769.

Here is given the original description of *Hirundo daurica*, a name generally attributed to Linnæus. The latter refers to 'Act. Holm.,' 1769, but without giving the exact page.

1769. Scopoli, J. A. Annus I. Historico-Naturalis. Descriptiones Avium Musei proprii earumque rariorum, quas vidit in vivario Angustiss. Imperatoris et in Museo excell. Comitis Francisci Annib. Turriani. 12mo. Lipsiæ, 1769. Pp. 168.

Hirundo rupestris described (p. 167).

1771. Linnæus, C. Mantissa Plantarum prima et altera, generum editionis vi. et specierum editionis ii. 8vo. Holmiæ, 1771. Pp. 588.

Hirundo daurica (App. p. 528). Described after Laxmann (*ut suprà*).

1773. Pallas, P. S. Reise durch verschiedene Provinzen des russischen Reichs. II. Theil. Erstes Buch vom Jahr. 1770. 4to. St. Petersburg, 1773. Pp. 744.

Hirundo alpestris, with its peculiar nest, described (Anhang, p. 709). [=*Hirundo daurica*, Laxm.] Pallas also refers to his 'Spicilegia,' but we can find no reference to the species in that work.

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* This name appears in the 10th edition of Linnæus's 'Systema,' 1758, and is adopted by our American colleagues and other ornithologists who recognize the 10th edition as their starting-point.

1774. Schaeffer, J. C. Elementa Ornithologica. Iconibus vivis coloribus expressis illustrata. 4to. Ratisbonæ, 1774.

The genus *Hirundo* (no. 100) characterized with the type (tab. xl.), which is *Hirundo rustica*.

1776. Sonnerat, M. Voyage à la Nouvelle Guinée, dans lequel on trouve la description des Lieux, des Observations physiques et morales, et des détails rélatifs à l'Histoire Naturelle dans le Règne Animal et le Règne Végétal. 4to. Paris, 1776. Pp. xvi, 208.

L'Hirondelle d'Antigue (p. 118, pl. lxxvi). [= *Hirundo gutturalis*, Scop. (*infrà*).]—This description and figure can belong to nothing else but the Chimney-Swallow of the East, though the size ("de l'Hirondelle de rivage d'Europe") and the absence of any remarks about the white spots on the tail will always invest the determination of Sonnerat's bird with a certain amount of doubt.

1777. Scopoli, J. A. Introductio ad Historiam naturalem, sistens genera lapidum, plantarum et animalium, hactenus detecta, characteribus essentialibus donata, in Tribus divisa, subinde ad leges naturæ. 8vo. Pragæ, 1777. Pp. 506 et Index.

On p. 483 the Swallows (*Hirundo*) are separated from the Swifts (*Apus*). This latter name, however, had already been employed by Pallas. *Cf.* Hartert, Cat. B. Brit. Mus. xvi. p. 437.

1779. [Buffon et] Montbeillard, P. G. de. Histoire Naturelle, générale et particulière, avec la description du Cabinet du Roi. Tome xxix. Histoire Naturelle des Oiseaux. Tome vi. 4to. Paris, 1779. Pp. xvi, 702.

The portion of the volume dealing with the Swallows (pp. 552–642) was written by Montbeillard, and the following species are described:—

L'Hirondelle de Cheminée ou l'Hirondelle domestique (p. 591, pl. xxv. fig. 1).—Figured in the 'Planches Enluminées' (pl. 543. fig. 1).

Variétés de l'Hirondelle domestique.

1. L'Hirondelle d'Antigue, à gorge couleur de rouille (p. 607).—Taken from Sonnerat (*suprà*).
2. L'Hirondelle à ventre roux de Cayenne (p. 607).—Figured by D'Aubenton (pl. 724. fig. 1). [=*Hirundo erythrogaster*, Bodd.]
3. L'Hirondelle au capuchon roux (p. 608).—Figured by D'Aubenton (pl. 723. fig. 2). [=*Hirundo cucullata*, Bodd.]

Oiseaux Étrangers qui ont rapport à l'Hirondelle domestique.

1. La Grande Hirondelle à ventre roux du Sénégal (p. 610).—Figured in the 'Planches Enluminées' (pl. 310). [=*Hirundo senegalensis*, L.]
2. L'Hirondelle à ceinture blanche (p. 611).—This is figured by D'Aubenton (pl. 724. fig. 2), but Montbeillard does not quote the title of the plate correctly. It is not mentioned by Boddaert,

who omitted it in the same way that he did pl. 542 of the 'Planches Enluminées,' but Gmelin gave a name to D'Aubenton's figure.

3. L'Hirondelle ambrée (p. 612).—Founded on Seba's description, and also on Brisson's "Hirondelle de rivage du Sénégal" (*suprà*, p. xxxii). Gmelin named it *Hirundo ambrosiaca*, and it has always been identified as a Swift; but, as Dr. Sclater has pointed out, Brisson distinctly states that his bird had twelve tail-feathers, and no satisfactory identification of Brisson's species has yet been attempted. (*Cf.* Sclater, P. Z. S. 1865, p. 601.)

L'Hirondelle au croupion blanc, ou l'Hirondelle de fenêtre (p. 614).—This is the House-Martin, figured in the 'Planches Enluminées' (pl. 542. fig. 2), and is *Hirundo urbica*, Linn.

L'Hirondelle de rivage (p. 632). [=*Hirundo riparia*, L.]

L'Hirondelle grise de rochers (p. 641). [=*Hirundo rupestris*, Scop.]

Le Martinet noir (p. 643). [=*Cypselus apus* (L.).]

Le Grand Martinet à ventre blanc (p. 660). [=*Cypselus melba*, L.]

Oiseaux Étrangers qui ont rapport aux Hirondelles et aux Martinets.

1. Le Petit Martinet noir (p. 668). [=*Cypseloides niger* (Gm.). *Cf.* Hartert, Cat. B. Brit. Mus. xvi. p. 494.]
2. Le Grand Martinet noir à ventre blanc (p. 669). [=*Hirundo dominicensis* (Gm.).]
3. Le Martinet noir et blanc à ceinture grise (p. 670).—Founded on Brisson's "Grande Hirondelle du Pérou," and not since identified.
4. Le Martinet à collier blanc (p. 671). [Is *Panyptila cayennensis* (Gm.). Vide *infrà*, p. xl.]
5. La Petite Hirondelle noire à ventre cendré (p. 673), founded on the "Hirondelle du Pérou" of Brisson. [=*Hirundo cinerea*, Gm.]
6. L'Hirondelle bleue de la Louisiane (p. 674). Pl. Enl. vii. pl. 722. [Is *Progne purpurea* (L.).]

Variétés.

1. L'Hirondelle de Cayenne (p. 675, *ex* D'Aubenton, Pl. Enl. pl. 545. fig. 2). [=*Hirundo chalybea*, Gm. (*vide infrà*, p. xxxvii).]
2. Montbeillard here gives some remarks on Purple Martins from South America, brought by M. Commerson.
3. Remarks on Catesby's Purple Martin.
4. Hirondelle de la baie de Hudson, of Edwards, remarked upon (p. 677).
7. La Tapere (p. 678). [=*Hirundo tapera*, L.]
8. Hirondelle brune et blanche à ceinture brune (p. 680). [=*Hirundo cincta*, Bodd., and *H. torquata*, Gm.]
9. L'Hirondelle à ventre blanc de Cayenne (p. 681). [=*Hirundo albiventer*, Bodd.]
10. La Salangane (p. 682). [=*Hirundo esculenta*, L. *Cf.* Hartert, Cat. B. Brit. Mus. xvi. p. 509.]
11. La Grande Hirondelle brune à ventre tacheté, ou l'Hirondelle des Blés (p. 694). [=*Hirundo borbonica* (Gm.).] A "variété" (p. 696) is also included.
12. La petite Hirondelle noir à croupion gris (p. 696). This is also *Hirundo borbonica* (Gm.).
13. L'Hirondelle à croupion roux et queue carrée (p. 698). This is the *Hirundo americana* of Gmelin, but we have not been able to recognize the species described.
14. L'Hirondelle brune acutipenne de la Louisiane (p. 699). [=*Chætura poliura* (Temm.). *Cf.* Hartert, *t. c.* p. 484.]
15. L'Hirondelle noire acutipenne de la Martinique (p. 702). [=*Chætura acuta* (Gm.). *Cf.* Hartert, *t. c.* p. 486.]

1783. Latham, John. A General Synopsis of Birds. Vol. ii. pt. 2. 4to. London, 1783. Pp. 808.

The Swallows (p. 560) known to Latham were 37 in number, including several species of Swifts. They are as follows:—

1. Chimney Swallow (p. 561). [=*Hirundo rustica*, L.]
   Var. A. White Swallow (founded on L'Hirondelle blanche of Brisson, *vide suprà*, p. xxxi).
2. Otaheite Swallow (p. 563, frontisp.). [=*Hirundo tahitica*, Gm. (p. 1016).]
3. Martin. [=*Hirundo urbica*, L.]
   Var. A, from North America (coll. Sir Joseph Banks), may have been *Tachycineta bicolor*.
4. Panayan Swallow (*ex* Sonnerat, Voy. N. Guin. pl. 76).
5. Rufous-bellied Swallow (*ex* D'Aubent. Pl. Enl. 724. fig. 1). [=*Hirundo erythrogaster*, Bodd.]
6. Cape Swallow (*ex* D'Aubent. Pl. Enl. 723. fig. 2). [=*Hirundo cucullata*, Bodd.]
7. Senegal Swallow. [=*Hirundo senegalensis*, L.]
8. White-bellied Swallow (*ex* D'Aubent. Pl. Enl. 724. fig. 2). [=*Hirundo fasciata*, Gm.]
9. Ambergris Swallow (*ex* Montb. H. N. Ois. p. 612). [=*Hirundo ambrosiaca*, Gm.]
10. Sand-Martin. [=*Hirundo riparia*, L.]
11. Rock-Swallow (*ex* Scopoli, *suprà*, p. xxxiv).
12. Crag-Swallow.—Described from a specimen in the Leverian Museum. It is, of course, the same as Scopoli's bird. As Latham observes:—"It seems to have great affinity to the last."
13. Daurian Swallow (*ex* Linn. Mant. *ut suprà*).
14. Red-headed Swallow.—Not identified.
15. Aoonalashka Swallow.—Described from a specimen in the Leverian Museum.
16. Rufous-headed Swallow.—Described and figured (pl. lvi.) from an unpublished drawing of Edwards's. It is said to be from the East Indies, and has been supposed to be *Petrochelidon fluvicola* (*infrà*, p. lvi), but is very probably the young of *Hirundo smithii*.
17. Black Swallow (*ex* Montb. H. N. Ois. vi. p. 668). [=*Cypseloides niger* (Gm.). *Cf.* Hartert, Cat. B. xvi. p. 494.]
18. St. Domingo Swallow. In the Leverian Museum. References given to Montbeillard and Brisson. [=*Hirundo dominicensis*, Gmelin, *infrà*, p. xl.]
19. Peruvian Swallow (*ex* Brisson, *suprà*, p. 498).—Not identified (*vide suprà*, p. xxxii).
20. Ash-bellied Swallow (*ex* Brisson, ii. p. 498—Hirondelle du Pérou). [=*Hirundo cinerea* of Gmelin.]
21. Violet Swallow. Founded on pl. 722 of D'Aubenton. [=*Progne purpurea* (L.).]
22. Chalybeate Swallow.—Described apparently from a specimen in the Leverian Museum, "beneath white." Latham and Gmelin both quote Brisson (ii. pl. 46. fig. 1), but do not quote D'Aubenton's plate 545. fig. 1 (=*H. dominicensis*, Gm.), which would pass for the "Chalybeate Swallow"; but they refer to fig. 2 of D'Aubenton's plate, which is represented as a dark brown bird, and which might pass for *Progne furcata*. It has, however, always been identified with *H. chalybea*, Gm., and the name is sanctioned by long custom.
23. Purple Swallow. [=*Hirundo purpurea*, L.]
24. Canada Swallow. [=*Hirundo subis*, L.]
25. Brazilian Swallow. [=*Hirundo tapera*, L.]
26. Brown-collared Swallow.—Founded on plate 723. fig. 1 of D'Aubenton. [=*Hirundo cincta* Bodd.]
27. White-winged Swallow.—Founded on plate 546. fig. 2 of D'Aubenton. It is the *Hirundo albiventer* of Boddaert.

Var. A. Taken from D'Aubenton's 'Planches Enluminées' (pl. 546. fig. 1). Not identified, and probably not a Swallow at all.

28. Esculent Swallow. [=*Hirundo esculenta*, L.]

29. Wheat Swallow.—Founded on "L'Hirondelle brune à ventre tacheté, ou L'Hirondelle des Blés," of Montbeillard (H. N. Oiseaux, vi. p. 694). D'Aubenton's figure (pl. 544. fig. 2) is here quoted as a "variety," in which identification Latham again follows Montbeillard.

30. Grey-rumped Swallow.—This is founded on Montbeillard's "Petite Hirondelle à croupion gris," which was brought from the Isle of France by M. Commerson. Montbeillard describes the bird as black above, with the rump whitish, and the entire under surface whitish. Latham quotes again fig. 2 of D'Aubenton's plate 544, forgetting, apparently, that on the previous page he had referred this figure to his "Wheat Swallow." His description, however, is undoubtedly that of the "Hirondelle de l'isle de Bourbon" of D'Aubenton (Pl. Enl. 544. fig. 2). The quotation of "fig. 2," in which he is followed by Gmelin, is quite wrong; but the description of the "Grey-rumped Swallow" is certainly *Collocalia francica* (Gm.), and is so identified by Mr. Hartert (Cat. B. xvi. p. 503).

31. Rufous-rumped Swallow.—Founded on Montbeillard's "Hirondelle à croupion roux et queue carrée." This may be *Petrochelidon pyrrhonota*, but the description is not accurate.

It is noteworthy that Latham seems to have appreciated the differences between Swallows and Swifts, as all the remaining species, nos. 32–37, are placed at the end of the Swallows, and are even spoken of as "Swifts." He did not, however, demonstrate the true distinctions between them.

1783. Boddaert, M. Table des Planches Enluminéez d'Histoire Naturelle de M. D'Aubenton. Avec les dénominations de MM. de Buffon, Brisson, Edwards, Linnæus, et Latham, précédé d'une Notice des Principaux Ouvrages Zoologiques enluminés. 8vo. Utrecht, 1783. Pp. 58.

The following are Boddaert's determinations:—

Page 19.—310. Hirondelle à ventre roux. [=*Hirundo senegalensis*, L.]

Page 31.—542. fig. 1. *Hirundo apus*, L.
fig. 2. *Hirundo urbica*, L.

Page 31.—543. fig. 1. Hirondelle de Cheminée. [=*Hirundo rustica*, L.]

Page 32.—543. fig. 2. Hirondelle de rivage. [=*Hirundo riparia*, L.]

Page 32.—544. fig. 1. Hirondelle noir acutipenne. [=*Hirundo pelasgia*, L.] [This identification is wrong, as Mr. Hartert refers this plate, or at least Montbeillard's description of the same, to *Chætura acuta* (Gm.).]

Page 32.—544. fig. 2. Hirondelle brune de l'isle de Bourbon. [=*Hirundo borbonica*, Gm.] No name given by Boddaert.

Page 32.—545. fig. 1. Martinet noire à ventre blanc. [=*Hirundo tapera*, L.]

Page 32.—545. fig. 2. Hirondelle de Cayenne, variété de l'Hirondelle bleue (pl. 722). Not named.

Page 32.—546. fig. 1. Hirondelle à ventre tacheté de Cayenne. [=*Hirundo maculata*, Bodd.]
546. fig. 2. Hirondelle à ventre blanc de Cayenne. [=*Hirundo albiventer*, Bodd.]

Page 45.—722. Hirondelle bleue. [=*Hirundo subis*, L.]

Page 45.—723. fig. 1. Hirondelle brune et blanche, à ceinture brune. [=*Hirundo cincta*, Bodd.]
723. fig. 2. Hirondelle à croupion roux. [=*Hirundo cucullata*, Bodd.]

Page 45.—724. fig. 1. Hirondelle à ventre roux. [=*Hirundo erythrogaster*, Bodd.] [Fig. 2 omitted.]
Page 45.—725. fig. 1. Petit Martinet noir.
725. fig. 2. Martinet à collier blanc. } Neither of these are identified by Boddaert.
Page 45.—726. fig. 1. Hirondelle Cumaria. [=*Chætura spinicauda* (T.).]
726. fig. 2. Hirondelle acutipenne. [=*Hirundo pelasgia.*] This identification is wrong, according to Mr. Hartert, who refers the figure to *Chætura poliura.*

1786. Scopoli, J. A. Deliciæ Floræ et Faunæ Insubricæ, seu novæ, aut minus cognitæ species plantarum et animalium, quas in Insubria Austriaca, tam spontaneas, quam exoticas vidit, descripsit, et aeri incidi curavit J. A. S. Pars ii. Ticini, 1786.

Hirundo gutturalis (p. 96, no. 115) proposed as a name for the *Hirondelle d'Antigue* of Sonnerat (Voy. Nouv. Guin. pl. 76).

1788. Gmelin, J. F. Caroli a Linné, Systema Naturæ etc. Tom. i. 8vo. Lipsiæ, 1788. Pp. 1032.

The genus *Hirundo* (pp. 1015–1026) contains in this work 44 species, an advance of 32 on the number known to Linnæus. As in the case of the twelfth edition of the 'Systema,' many of the species are Swifts.

The following are the species known to Gmelin, and, as usual, the names given for the first time are simply the latinization of the English titles given by Latham. This brings up to date the number of species of Swallows known to the older authors.

1. *Hirundo rustica*, L. *β. Hirundo alba*, ex Brisson, ii. p. 489.
2. *Hirundo tahitica*, p. 1016.—Founded on Latham's "Otaheite Swallow."
3. *Hirundo esculenta.*—Founded on Latham's "Esculent Swallow," which is again taken from Brisson (Orn. ii. p. 510, pl. 46. fig. 2).
4. *Hirundo borbonica.*—Founded on the "Wheat Swallow" of Latham, which is derived from Montbeillard (*suprà*, p. xxxviii), and including the Hirondelle de l'Isle de Bourbon ('Planches Enluminées,' pl. 544. fig. 2), which is also *Hirundo borbonica* (Gmelin).
5. *Hirundo francica.*—Founded on the "Grey-rumped Swallow" of Latham, but by some mistake D'Aubenton's figure of the "Hirondelle de Bourbon" is again quoted. The species is *Collocalia francica* (Gmelin) : *cf.* Hartert, *l. c.* p. 503.
6. *Hirundo americana.*—Founded on the "Rufous-rumped Swallow" of Latham. This may be *Petrochelidon pyrrhonota*, but has not since been identified.
7. *Hirundo urbica*, L.
8. *Hirundo panayana.*—Founded on the "Panayan Swallow" of Latham (*suprà*, p. xxxvii).
9. *Hirundo rufa.*—Founded on Latham's "Rufous-bellied Swallow" (*suprà*, p. xxxvii), which is *Hirundo erythrogaster*, Bodd.
10. *Hirundo capensis.*—Founded on Latham's "Cape Swallow" (*suprà*, p. xxxvii), which=*Hirundo cucullata*, Bodd.
11. *Hirundo riparia*, L.
12. *Hirundo rupestris* ("Rock-Swallow" of Latham).
13. *Hirundo montana* ("Crag-Swallow" of Latham). } Both of these=*Biblis rupestris* (Scop.).
14. *Hirundo purpurea*, L.

15. *Hirundo apus=Cypselus apus* (Linn.).
16. *Hirundo sinensis.*—Founded on the "Chinese Swift" of Latham (ii. p. 586), where the description is again founded on Sonnerat's "Grand Martinet de la Chine." Mr. Hartert (Cat. B. Brit. Mus. xvi. p. 472, note) believes this description to be that of a *Cotile*; but this cannot be the case, as the dimensions are given as "eleven inches and a half."
17. *Hirundo subis*, L.
18. *Hirundo senegalensis*, L.
19. *Hirundo ambrosiaca.*—Founded on the "Ambergris Swallow" of Latham (*vide suprà*, p. xxxvii).
20. *Hirundo fasciata.*—Founded on the "White-bellied Swallow" of Latham (*suprà*, p. xxxvii).
21. *Hirundo tapera*, L.
22. *Hirundo torquata.*—Founded on Latham's "Brown-collared Swallow." [=*Hirundo cincta*, Bodd.]
23. *Hirundo leucoptera.*—Founded on Latham's "White-winged Swallow." [=*Hirundo albiventer*, Bodd.]
24. *Hirundo pelasgia=Chætura pelasgia* (L.).
25. *Hirundo acuta.*—Founded on Latham's "Sharp-tailed Swallow" (p. 584). [Is a *Chætura*: *cf.* Hartert, *l. c.* p. 486.]
26. *Hirundo melba*, L.
27. *Hirundo cayennensis.*—Founded on Latham's "White-collared Swallow." [=*Panyptila cayennensis*: *cf.* Hartert, *l. c.* p. 461.]
28. *Hirundo daurica*, L.
29. *Hirundo erythrocephala.*—Founded on Latham's "Red-headed Swallow." May possibly be *Petrochelidon fluvicola*: *cf.* Sharpe, Cat. B. x. p. 200.
30. *Hirundo unalaschkensis.*—Founded on Latham's "Aoonalashka Swallow," and not since identified.
31. *Hirundo indica.*—Founded on Latham's "Rufous-headed Swallow." This has not since been identified with certainty.
32. *Hirundo nigra.*—Founded on Latham's "Black Swallow." [=*Cypseloides niger* (Gmelin): *cf.* Hartert, *l. c.* p. 494.]
33. *Hirundo dominicensis.*—Founded on the "St. Domingo Swallow" of Latham.
34. *Hirundo peruviana.*—Founded on the "Peruvian Swallow" of Latham, and not since identified.
35. *Hirundo cinerea.*—Founded on the "Ash-bellied Swallow" of Latham. [=*Atticora cinerea* (Gmelin).]
36. *Hirundo violacea.*—Founded on the "Violet Swallow" of Latham. [=*Progne purpurea* (L.).]
37. *Hirundo chalybea.*—Founded on the "Chalybeate Swallow" of Latham. [=*Progne chalybea* (Gm.).]

1789. Sparrman, A. Museum Carlsonianum. II. fasc. iv. 4to. Holmiæ, 1789.

Hirundo javanica described and figured (pl. 100).

1791. Bartram, W. Travels through North and South Carolina, Georgia, East and West Florida, etc. Sm. 8vo. Philadelphia, 1791. Pp. xxxiv, 522.

The "Chimney-Swallow" is called *Hirundo cerdo* (p. 292). It may be *Chætura pelasgia*. It is certain that Bartram ought not to be regarded as a binomialist, as he calls the "Blue-winged Yellow Bird" *P. aureus* alis cæruleis.

1799. Barton, B. S. Fragments of the Natural History of Pennsylvania. 4to. Philadelphia, 1799. Pp. 24.

Hirundo horreorum, sp. n. (p. 17). [=*H. erythrogaster*, Bodd.]

1805. Azara, Felix de. Apuntamientos para la Historia Natural de los Páxaros del Paraguay y Rio de la Plata. Tomo ii. 4to. Madrid, 1805. Pp. 502–512.

The following species are recorded by Azara (*cf.* Hartl. Index Azara, *infrà*, p. liii) :—

300. *Golondrina domestica* (p. 502). [=*Hirundo domestica*, Vieill. N. Dict. xiv. p. 520.]
301. *Golondrina parda* (p. 505). [=*Hirundo tapera*, Linn.]
302. *Golondrina vientre roxizo* (p. 507). [=*Hirundo cyanopyrrha*, Vieill. N. Dict. xiv. p. 510. =*Hirundo erythrogaster*, Bodd.]
303. *Golondrina timoneles negros* (p. 508). [=*Hirundo cyanoleuca*, Vieill. N. Dict. xiv. p. 509.]
304. *Golondrina rabadilla blanca* (p. 509). [=*Hirundo leucorrhoa*, Vieill. N. Dict. xiv. p. 519.]
305. *Golondrina rabadilla acanelada* (p. 511). [=*Hirundo pyrrhonota*, Vieill. *t. c.* p. 519.]
306. *Golondrina vientre amarillazo* (p. 512). [=*Hirundo ruficollis*, Vieill. *t. c.* p. 528.]

1806. Levaillant, F. Histoire Naturelle des Oiseaux d'Afrique. Vol. v. 4to. Paris, 1806. Pp. 163.

The chapter "Des Martinets et des Hirondelles" commences on p. 140, and contains the following species :—

Plate 243. Martinet à gorge blanche. [=*Cypselus gutturalis*, V. (=*Micropus africanus*, Temm. : *cf.* Hartert, Cat. B. xvi. p. 440).]

Plate 244. fig. 1. Martinet à croupion blanc.—May be *Cypselus caffer*, Licht., although, as Vieillot remarks in his description of *Hirundo atra* (N. Dict. xiv. p. 523), the bird is drawn with a hind toe like a Swallow. Sundevall (Crit. p. 51) says that it can hardly be anything but *Cypselus caffer*, though there is no Swallow or Swift which resembles the figure given by Levaillant. It is doubtless compiled from memory or imagination, like the next.

Plate 244. fig. 2. Le Martinet vélocifère.—To this Vieillot gave the name of *Hirundo velox* (N. Dict. d'Hist. Nat. xiv. p. 533). It may have been meant for *Psalidoprocne holomelæna*, as Sundevall suggests (Crit. p. 51), but the figure is entirely inaccurate.

Plate 245. fig. 1. Hirondelle rousseline, mâle.—May have been intended for *Hirundo cucullata*, to which the description of its habits seems to refer it, but the figure resembles a black-headed Mosque-Swallow. Sundevall (Crit. p. 51) believes it to be a made-up bird.

Plate 245. fig. 2. Hirondelle à front roux.—This is *Hirundo rufifrons* of Vieillot (N. Dict. xiv. p. 521). This has generally been supposed to be intended for *Hirundo albigularis* of the Cape Colony, but we think it is just as likely to be intended for *H. rustica*. It is too bad a figure to be admitted to represent either of these birds.

Plate 246. fig. 1. Hirondelle fauve.—Is *Cotile fuligula* (Licht.). *Cf.* Sundev. Crit. p. 52.

Plate 246. fig. 2. Hirondelle de Marais, ou La Brunette.—Is *Hirundo paludicola*, Vieill. N. Dict. xiv. p. 511.

Plate 247. Hirondelle huppée, mâle.—Apparently a made-up bird from a *Dendrochelidon*. It has never been identified. (*Cf.* Sundev. Crit. p. 52.)

1807. Vieillot, L. P. Histoire Naturelle des Oiseaux de l'Amérique septentrionale. Folio. Tome i. Paris, 1807. Pp. iv, 90. Pls. 57.

Hirondelle bleue : *Hirundo cærulea*, p. 57, pls. 26 (♂), 27 (♀). [=*Progne purpurea* (L.).]

L'Hirondelle à ventre blanc : *Hirundo dominicensis*, p. 59, pls. 28 (♂), 29 (♀). [=*Progne dominicensis* (Gm.).]
L'Hirondelle rousse : *Hirundo rufa*, p. 60, pl. 30. [=*Hirundo erythrogaster*, Bodd.]
L'Hirondelle bicolor : *Hirundo bicolor*, p. 61, pl. 31. [=*Tachycineta bicolor*.]
L'Hirondelle fauve : *Hirundo fulva*, p. 62, pl. 32. [=*Petrochelidon fulva*.]

1811. Pallas, P. Zoographia Rosso-Asiatica, sistens omnium animalium in extenso Imperio Rossico et adjacentibus maribus observatorum recensionem, domicilia, mores et descriptiones, anatomen atque icones plurimorum. Vol. i. 4to. Petropoli, 1811. Pp. 572.

Hirundo domestica (p. 528) includes, no doubt, *H. rustica* and *H. gutturalis*. *H. lagopoda*, sp. n. (p. 532).

1812. Wilson, A. American Ornithology. Vol. v. Folio. Philadelphia, 1812. Pp. xii, 122, pls. xxxvii.–xliv.

Hirundo americana (nec Gm.) described and figured (p. 34, pl. xxxviii. figs. 1, 2) =*H. erythrogaster*, Bodd.; *H. viridis* (p. 44, pl. xxxviii. fig. 3) =*Tachycineta bicolor*; *H. riparia* (p. 46, pl. xxxviii. fig. 4).

Hirundo purpurea described and figured (pl. xxxix. figs. 2, 3).

1816. Leach, W. E. Systematic Catalogue of the Specimens of the Indigenous Mammalia and Birds that are preserved in the British Museum, with their Localities and Authorities. Sm. 4to. London, 1816. Pp. 42.

Hirundo domestica is the name employed for the Chimney-Swallow (p. 19). It is doubtful if this Catalogue was ever published, and it was probably used merely to cut up and label specimens in the Zoological Galleries of the British Museum, of which Leach was at that time Keeper (*cf.* Salvin, ed. Leach's Catalogue, published by the Willoughby Society, 1882). Thomas Forster, moreover, in 1817 speaks of the 'Catalogue' as "newly printed" by his friend Dr. Leach.

1817. Cuvier, G. Règne Animal. Vol. i. 8vo. Paris, 1817.

Hirundo ludoviciana (p. 374, ex Pl. Enl. 725. fig. 2) =*Progne purpurea* (L.).

1817. Forster, T. Observations of the Natural History of Swallows; with a collateral statement of facts relative to their Migration, and to their Brumal Torpidity: and a Table of reference to Authors. To which is added a General Catalogue of British Birds, etc. Sixth edition, enlarged. 8vo. London, 1817. Pp. 97.

This is a little book which we purchased many years ago. It is not mentioned by Professor Elliott Coues among the many works on the Swallow by Thomas Forster, which he quotes in his admirable "Bibliography" (Bull. U. S. Geol. & Geogr. Survey of the Territories, vol. v. no. 4, pp. 522–528). It appears to be remarkable chiefly for the "synonyms" given by the author, who, in his Preface, says :—

"I have also added what is known of the remaining species of the genus, both with a view to make this monograph as perfect as possible, etc." Thus we have the following synonyms :—

For Hirundo rustica
Hirundo caminicola (p. 3).
For Hirundo urbica
Hirundo domestica, H. agrestis, and *H. fenestrala.*
For Hirundo apus
Apus major, Hirundo Cypselus major, and *Cypselus niger* (p. 9).
For Hirundo riparia
Hirundo arenaria (p. 11).
For Hirundo tahitica
Hirundo cærulea (p. 12).
Hirundo philippenensis (p. 12) =H. panayana (quoted as a synonym).
For Hirundo fasciata
Hirundo ripicola, H. fluvialis (p. 13).
For Hirundo ambrosiaca
Hirundo cinerascens (p. 14), *H. marina indigena.*
For Hirundo rupestris
Hirundo rupicola (p. 14).
For Hirundo tapera
Hirundo americana (p. 15).

Many of these synonyms are not quoted by us in the body of the work, but they deserve attention. Forster still keeps the Pratincole as a species of *Hirundo* (p. 16), and then follows an essay "On the winter retreat of the Swallow Tribe in general" (pp. 19–29), and another chapter entitled "Direct Evidence tending to establish the annual Submersion of Swallows" (pp. 29–32) ; still another on "Direct Evidence of the Migration of Swallows" (pp. 32–40), and finally "Opinions of Writers in different Ages" (pp. 40–50). Then follows a list of British Birds, with the species indicated which adorned the collection of "E. Forster, jun., of Clapton."

1817. Forster, T. Synoptical Catalogue of British Birds, intended to identify the species mentioned by different names in several catalogues already extant; forming a book of reference to observations on British Ornithology. 8vo. London, 1817. Pp. 64. [Plate of *Strix scops*, head and foot.]

The occasion of this publication was the issue of Dr. Leach's 'Catalogue,' with much of which Forster did not agree, and he published his 'Synoptical Catalogue' to make things easier for the student. "I do not pretend to knowledge enough of Ornithology in general, to determine which of the two arrangements is the best for Birds universally" (Preface, p. iv). Yet, after confessing his ignorance, he bestows names on the Swallows, for the rejection of which unfortunately there seems no rule at present. In the "Catalogue and Generic Division of British Birds" (p. 13) he calls the British Swallows by the following names (p. 55) :—

128. *Chelidon procne.* Chimney Swallow.
129. *Hirundo urbica.* Common Martlet.
130. *Clivicola europæa.* Sand Martin.

The definition of the genus *Hirundo* by Schaeffer, with the Chimney-Swallow as the type, has fortunately preserved the name of *Hirundo* instead of *Chelidon* for this large assemblage of Swallows. Thus *Chelidon* of Forster becomes a synonym of *Hirundo*, Schaeffer (ex Linn.). *Hirundo* of Forster= *Chelidon*, Boie (*posteà*, p. xlvi). With regard to *Clivicola*, this genus is now being generally adopted over *Cotile* of Boie, but Forster, in the same work (p. 17), calls the Sand-Martin *Riparia europæa*. If a mere name is sufficient now-a-days to establish a genus, then, it seems to us, *Riparia* must take precedence of *Clivicola* and the name of the Sand-Martin become *Riparia riparia*.

1817. Vieillot, L. P. Nouveau Dictionnaire d'Histoire Naturelle. Tome xiv. 8vo. Paris, 1817. Pp. 627.

The genus "Hirondelle" is treated of on pages 501–537. Many names are here given which are in general use at the present day, but in some instances they are founded on the species of Levaillant's 'Oiseaux d'Afrique,' just as were those of Stephens. The names given by the latter naturalist have always been made to give way to those of Vieillot; but, although they were published in the same year, it seems to us that, in all probability, the volume of Stephens's 'General Zoology' was issued before the fourteenth volume of the 'Dictionnaire.'

Hirundo cyanoleuca (p. 509) (ex Azara, *Golondrina timoneles negros*). [=*Atticora cyanoleuca* (V.).]

Hirundo versicolor (p. 509). [=*Progne purpurea* (L.).]

Hirundo cyanopyrrha (p. 510), from French Guiana. [=*H. erythrogaster*, Bodd.]

Hirundo fusca (p. 510) (ex Azara, *Golondrina parda*).

Hirundo paludicola (p. 511) (ex Levaill. Ois. d'Afr. pl. 245. fig. 2). This is *H. palustris* of Stephens, and the latter name may really have priority, if the actual months of publication could be discovered.

Hirundo leucorrhoa (p. 519) (ex Azara, *Golondrina rabadilla blanca*), nec *H. leucorrhoa*, Steph. (*infrà*, p. xlv), which is *Cypselus caffer*.

Hirundo pyrrhonota (p. 519). [=*Petrochelidon pyrrhonota* (V.).]

Hirundo domestica (p. 520) (ex Azara, *Golondrina domestica*).

Hirundo rufifrons (p. 521) (ex Levaill. Ois. d'Afr. pl. 245. fig. 2). The same name is bestowed by Stephens (*vide infrà*, p. xlv) on the same figure.

Hirundo nigricans. From "New Holland." [=*Petrochelidon nigricans* (V.).]

Hirundo ruficollis (p. 523). From Brazil. [=*Stelgidopteryx ruficollis* (V.).]

Hirundo cristata (p. 523) (ex Levaill. Ois. d'Afr. pl. 247. fig. 1).

Hirundo atra (p. 523) (ex Levaill. Ois. d'Afr. pl. 244. fig. 1). Is probably *Cypselus caffer*, Licht.

Hirundo albicollis (p. 524). From Brazil. [=*Chætura zonaris*: *cf.* Hartert, Cat. B. xvi. p. 476.]

Hirundo virescens (p. 525) (ex D'Aubenton, Pl. Enl. 544. fig. 2). [=*Phedina borbonica* (Gm.).]

Hirundo cinerea (p. 526), nec *H. cinerea*, Gm. (*ut suprà*, p. xl). [=*Cotile riparia* (L.).]

Hirundo rutila (p. 528), founded on a specimen in the Paris Museum. [=*Cypseloides rutilus* (V.): *cf.* Hartert, Cat. B. xvi. p. 493.]

Hirundo velox (p. 533) (ex Levaill. Ois. d'Afr. pl. 244. fig. 2). This same name is bestowed by Stephens on the same plate.

Hirundo albiventris, nec Bodd. (p. 533) (ex Vieill. Ois. Amér. Sept. pls. 28, 29). [=*Progne dominicensis*.]

Hirundo flavigastra (p. 534) (ex Azara, *Golondrina vientre amarillazo*). [=*Stelgidopteryx ruficollis* (V.) (*suprà*, p. xli).]

1817. Stephens, J. F. General Zoology, or Systematic Natural History, commenced by the late George Shaw, M.D., F.R.S. With Plates. Vol. x. part 1. 8vo. London, 1817. Pp. xx, 317.

The *Hirundinidæ* occupy pp. 77–134. *H. rustica* is figured (pl. ix.).

Hirundo savignii is the name given to pl. 4 of Savigny's 'Histoire Naturelle d'Egypte,' so that this is the first name for the Egyptian Swallow.

Hirundo rufifrons (p. 91), founded on "L'Hirondelle à front roux" of Levaillant. *Hirundo capensis* figured (pl. x.). What species is figured here we cannot affirm for certain. It is not taken from Levaillant's "Hirondelle rousseline," but appears to have been copied by Griffith from D'Aubenton's "Hirondelle des Cheminées" (Pl. Enl. 543. fig. 1). It is probable that the plate had been prepared before Stephens undertook the work, but the figure is undoubtedly only that of a Common Swallow.

Hirundo cristata (p. 94) is the name given to Levaillant's "Hirondelle huppée."

Hirundo velox (p. 97) is the name bestowed on Levaillant's "Martinet vélocifère."

Hirundo leucorrhoa (p. 98), founded on Levaillant's "Martinet à croupion blanc." Probably *Cypselus caffer* (*cf.* Hartert, Cat. B. xvi. p. 450).

Hirundo gularis (p. 99), founded on Levaillant's "Martinet à gorge blanc," = *Cypselus africanus*, Temm.

Hirundo palustris (p. 101), founded on "L'Hirondelle de Marais, ou La Brunette," of Levaillant.

Hirundo platensis (p. 126) is evidently taken from Latham's "Rufous-rumped Swallow" and is *Hirundo pyrrhonota* (V.).

Hirundo indica figured (pl. xiv.), the figure being a copy of that of Latham, Gen. Syn. pl. lvi. This bird is probably the young of *Hirundo smithii*.

1818. Tuckey, Capt. J. K. Narrative of an Expedition to explore the River Zaire, usually called the Congo, in South Africa, in 1816. To which is added the Journal of Professor Smith; some general observations on the country and its inhabitants; and an Appendix, containing the Natural History of that part of the Kingdom of Congo through which the Zaire flows. 4to. London, 1818. Pp. lxxxii, 498.

At p. 407 is an Appendix, "No. IV. A general notice of the Animals taken by Mr. John Cranch, during the expedition to explore the source of the River Zaire." This Appendix is attributed to Dr. Leach, but we can find no mention of his authorship in the volume itself.

Hirundo smithii is described as a new species (p. 407).

1820. Maximilian, Prinz zu Wied. Reise nach Brasilien in den Jahren 1815 bis 1817. Band i. 4to. Frankfurt-a.-M., 1820. Pp. 380.

Hirundo jugularis, sp. n. (p. 345). [= *Stelgidopteryx ruficollis* (V.).]

Hirundo melanoleuca, sp. n. (p. 345).

1821. ——. The same. Band ii. 4to. Frankfurt-a.-M., 1821. Pp. 345.

Hirundo minuta, sp. n. (p. 336). [= *Atticora cyanoleuca* (V.).]

1822. Boie, F. Ueber Classification, insonderheit der europäischen Vögel. Isis, 1822, pp. 545–564.

On p. 550, *Hirundo* is mentioned, with *H. rustica* for the type; *Chelidon*, with *C. urbica* and *C. rupestris*; and *Cotile*, with *C. riparia* for the type. The latter is now superseded by *Clivicola* of Forster's list (*anteà*, p. xliii).

1823. Lichtenstein, H. Verzeichniss der Doubletten des zoologischen Museums der k. Universität zu Berlin, nebst Beschreibung vieler bisher unbekannter Arten von Saügethieren, Vögeln, Amphibien und Fischen. Sm. 4to. Berlin, 1823. Pp. x, 118.

Hirundo hortensis (p. 57) (ex Azara, "*Golondrina vientre amarillazo*"). [=*Stelgidopteryx ruficollis* (V.).]

Hirundo melanopyga (p. 57) (ex Azara, "*Golondrina timoneles negros*"). [=*Atticora cyanoleuca*, (V.).]

Hirundo cahirica (p. 58). [=*Hirundo savignii*, Steph.]

Hirundo ruficeps, sp. n. (p. 58). Nubia. [=*Hirundo smithii*, Leach.]

1823. Latham, John. A General History of Birds. Vol. vii. 4to. Winchester, 1823. Pp. 370.

The Swallows occupy pages 276–330, and the author recognizes 66 species, instead of the 37 with which he was acquainted in 1783.

He divides the genus "Swallow" into three sections, placing the Swifts on one side on account of the form of their toes, and thus disposing of 11 species. This leaves 55 species of Swallow, but many of these are really Swifts. The additional species to the list of 1783 (Gen. Syn. ii. pt. 2, p. 560) are the following :—

2. Barn-Swallow (p. 282).
5. Brunette Swallow (p. 286) [ex Levaillant, "Hirondelle de Marais"].
6. Indian Martin-Swallow (p. 287). Evidently taken from the figure afterwards published by Gray and Hardwicke. [=*Cotile sinensis*.]
7. Dusky Swallow (p. 287). Apparently a species of *Psalidoprocne*. "Inhabits Africa. In the collection of Mr. Bullock."
15. Linchi Swallow (p. 292). [=*Collocalia linchi*, Horsf. & Moore: *cf.* Hartert, Cat. B. Brit. Mus. xvi. p. 508.]
16. Klecho Swallow (p. 293). [=*Hirundo klecho*, Horsf., = *Macropteryx longipennis* (Rafin.): Hartert, Cat. B. xvi. p. 514.]
20. Crested Swallow (p. 299) [ex Levaillant, "L'Hirondelle huppée]. *Vide suprà*, p. xli.
22. Javan Swallow (p. 300) [ex Sparrman, *Hirundo javanica*]. *Vide suprà*, p. xl.
24. Rufous-fronted Swallow (p. 301) [ex Levaillant, "Hirondelle à front roux"].
25. Fulvous Swallow (p. 302) [ex Levaillant, "L'Hirondelle fauve"].
26. Blue Swallow (p. 302). "Inhabits New Holland, Mr. Lambert." Not identified by us.
29. Coromandel Swallow (p. 304). "Called in drawings from India 'Anabul.'"
30. Collared Swallow (p. 304). [=*Chætura zonaris* (Shaw): *cf.* Hartert, Cat. B. xvi. p. 476.]
37. Wire-tailed Swallow (pl. cxii. p. 309). [=*Hirundo smithii*.]
38. Dun-rumped Swallow (p. 309). [=*Petrochelidon nigricans*.]
42. Quebec Swallow (p. 312). [=*Tachycineta bicolor*.]

45. Pied Swallow (p. 313). [=*Atticora melanoleuca*.]
48. Supercilious Swallow (p. 314). [=*Tachycineta leucorrhous* (V.).]
52. Severn Swallow (p. 317). [=*Tachycineta bicolor* (V.).]
54. Rufous-necked Swallow (p. 319). [=*Petrochelidon fulva* (V.).] The Swifts, "with all the four toes placed forward," follow (pp. 320–330).

1823. Say, T. Account of an Expedition from Pittsburgh to the Rocky Mountains performed in the years 1819 and 1820, under the command of Major Stephen H. Long.

Hirundo lunifrons, sp. n. (p. 47). [This is the first description of the North-American Cliff-Swallow generally recognized by authors, who do not admit that Vieillot's name of *H. pyrrhonota* applies to it, though we have no doubt as to the correctness of the latter view.]

1823. Temminck, C. J., et Laugier de Chartrouse, Baron Meiffren. Nouveau Recueil de Planches Coloriées. Vol. iv.

Plate 161. fig. 1. *Hirundo fucata*, sp. n.—Brazil.
Plate 161. fig. 2. *Hirundo jugularis*, Pr. Max. [=*Stelgidopteryx ruficollis* (V.).]
Plate 209. fig. 1. *Hirundo minuta*, Pr. Max.—Brazil. [=*Atticora cyanoleuca* (V.).]
Plate 209. fig. 2. *Hirundo melanoleuca*, P. Max.
Plate 83. fig. 2. *Hirundo javanica*, figured.

The Swallows figured by Temminck appear in the 14th and 27th "livraisons." As far as can be ascertained, these were issued in the year 1823.

1824. Clinton, Dewitt. On the *Hirundo fulva* of Vieillot, with some general remarks on the Birds of this Genus. Ann. Lyc. N. Y. i. pp. 156–163.

Hirundo opifex, sp. n. (p. 161). [=*Petrochelidon pyrrhonota* (V.).] "I had supposed it to be a new species, and had named it the Artificer (*Hirundo opifex*). I have since, however, found it figured and accurately described under the name of *Hirundo fulva* by M. Vieillot."

1824. Audubon, J. J. Ann. Lyc. N. Y. i. pp. 163–166.

This is an appendix to the preceding paper, and Audubon states that he found the bird in 1815 and gave it the MSS. name of *Hirundo republicana*.

1825. Audouin, Victor. Explication sommaire des Planches d'Oiseaux de l'Egypte et de la Syrie publiés par Jules César Savigny. Folio. Pp. 251–324.

Hirundo riocouri, sp. n. (p. 270). [=*Hirundo savignii*, Steph., *anteà*, p. xlv.]

1826. Boie, F. Generalübersicht der ornithologischen Ordnungen, Familien und Gattungen. Isis, 1826, pp. 975–982.

On p. 971, Boie includes in the Family *Hirundinidæ* the following genera:—

Cypselus.—Type *Hirundo leucorrhoa*, Shaw [*i. e.* Stephens, *suprà*, p. xlv, *nec* V.].

Acanthylis.—Type *Hirundo spinicauda*, Temm. [Preoccupied by *Chætura*, Stephens, Gen. Zool. xiii. pt. 2, p. 76: *cf.* Hartert, Cat. B. Brit. Mus. xvi. p. 470.]

Chelidon.—Type *Hirundo viridis*, Wils.

Cotyle.—Type *Hirundo fucata*, Temm., with *C. rupestris* and *C. riparia*.

Progne.—Type *P. purpurea* (Gm.).

Cecropis.—Type *H. capensis* (Gm.).

As in his previous paper, Boie gives no descriptions; but the types being indicated, his genera *Progne* and *Cecropis* have been adopted and admitted.

1826. Lesson, R. P., and Garnot, P. Voyage autour du Monde exécuté par Ordre du Roi sur la Corvette 'La Coquille' pendant les années 1822, 1823, 1824, et 1825. Zoologie. Vol. I. 1ère partie. 4to. Paris, 1826. Pp. 743.

Hirundo taitensis, sp. n., Otaiti. [=*H. tahitica*, Lath.]

1826. Stephens, J. F. General Zoology. Vol. xiii. pt. 2. London. 8vo. Pp. 290.

This volume forms a Supplement to the "Birds" of Shaw's 'General Zoology.' At p. 77 he gives a list of the species of "Swallow."

Hirundo filifera, described (p. 78) [ex Latham's "Wire-tailed Swallow"].

1827. Swainson, W. A Synopsis of the Birds discovered in Mexico by W. Bullock and Mr. William Bullock, jun. Phil. Mag. new series, i. pp. 364–369.

Hirundo thalassina, sp. n. (p. 366). From the "Table Land, Rio del Monte."

Hirundo melanogaster, sp. n. (p. 366). "Inhabits the Table Land of Mexico."

By some *lapsus calami*, Swainson, usually so accurate, describes this Swallow as *H. melanogaster*, but it has no black on the belly, nor does he mention such a character in his diagnosis. In 1858 Sclater changed the name to *Petrochelidon swainsoni*.

1830. Lichtenstein, H. Preis-Verzeichniss mexicanischer Vögel etc. vom Jahre 1830.

This is only known to ornithologists in this country from the reprint published by Dr. Cabanis in the 'Journal für Ornithologie' for 1863 (pp. 54–60).

Hirundo fumaria, sp. n., p. 2 (descr. nullâ). [=*Hirundo erythrogaster*, Bodd.]

Hirundo prasina, sp. n., p. 2 (descr. nullâ). [=*Tachycineta bicolor*.]

Hirundo coronata, sp. n., p. 3 (descr. nullâ). [=*Petrochelidon swainsoni*, Scl.] Had this species been diagnosed by Lichtenstein, his name would have had priority.

1830. Maximilian, Prinz zu Wied. Beiträge zur Naturgeschichte von Brasilien. Band iii. Abth. i. 8vo. Weimar, 1830. Pp. 636.

The *Hirundinidæ* occupy pp. 353–374.

Hirundo pascuum, sp. n. (p. 360). [=*Progne tapera* (L.).]

1830. Quoy et Gaimard. Voyage de l'Astrolabe, exécuté par ordre du Roi pendant les années 1826–27–28–29 sous le commandement de M. J. Dumont d'Urville. Zool. vol. i. 8vo. Paris, 1830. Atlas in folio.

Hirundo frontalis, n. sp., Dorey (pl. 12. fig. 1). [=*Hirundo javanica*, Sparrm.]

Hirundo nigricans, figured (pl. 12. fig. 2).

1830–32. Gray, J. E. Illustrations of Indian Zoology, chiefly selected from the Collection of Major-General Hardwicke. Vol. i. Folio. London, 1830–32.

Hirundo chinensis is figured (pl. 35. fig. 3), but no description is given. This is not the same as the *Hirundo sinensis* of Gmelin (*vide suprà*, p. xl).

1831. Brehm, C. L. Handbuch der Naturgeschichte aller Vögel Deutschland's, etc. 8vo. Ilmenau, 1831. Pp. 1085. Taf. xlvi.

Brehm adopts Boie's genus *Cecropis* for *Hirundo rustica* (p. 137), with a second form, *Cecropis pagorum*. This name has been adopted by recent writers for the richly-coloured individuals of *Hirundo rustica*, which are often mistaken for *Hirundo savignii*. Brehm does not found his species on the rufous colour of the underparts, but upon the more flattened skull and longer toes of his *C. pagorum*! *Chelidon urbica* is divided into three races, viz.: 1. *C. urbica* (p. 139), 2. *C. fenestrarum* (p. 140), 3. *C. rupestris* (p. 140). *Cotyle riparia* has two other forms, *Cotyle fluviatilis* (p. 142) and *Chelidon* (lapsu !) *microrhynchos*. *Cotyle rupestris* has no subspecies or races attached to it.

1831. Lesson, R. P. Traité d'Ornithologie, ou Tableau Méthodique des Ordres, Sous-Ordres, Familles, Tribus, Genres, Sous-Genres et Races d'Oiseaux. 8vo. Paris, 1831.

Hirundo castanea (p. 268). [=*Hirundo savignii*, Steph.]
Hirundo flaviventer (p. 269). Brésil. [?=*Stelgidopteryx ruficollis*.]
Hirundo robini (p. 270). [=*Cypseloides rutilus* (V.) : *cf.* Hartert, Cat. Birds, xvi. p. 493.]

1831. Franklin, Major James. Catalogue of Birds (systematically arranged) which were collected on the Ganges between Calcutta and Benares, and in the Vindhyian hills between the latter place and Gurrah Mundela, on the Nerbudda. P. Z. S. 1831, pp. 114–125.

Hirundo filicaudata, sp. n. [=*Hirundo smithii*, Leach.]

1832. Sykes, W. H. Catalogue of Birds of the Raptorial and Insessorial Orders (systematically arranged) observed in the Dukhun. P. Z. S. 1832, pp. 77–79.

Hirundo jewan, sp. n. (p. 83). [=*Hirundo gutturalis*, Gm.]
Hirundo erythropygia, sp. n. (p. 83).
Hirundo concolor, sp. n. (p. 83). [=*Biblis concolor* (Sykes).]

1835. Temminck, C. J. Manuel d'Ornithologie, ou Tableau Systématique des Oiseaux qui se trouvent en Europe. Seconde Edition. Troisième Partie. 8vo. Pp. 305.

Hirundo rufula, sp. n. (p. 298).

The description leaves little doubt of the species intended by the proposer, but he identifies his *Hirundo rufula*, which he apparently described from Sicilian specimens, with *Hirundo capensis* of Gmelin, and mixes up the "Hirondelle rousseline" of Levaillant, &c.

1835. Rüppell, E. Neue Wirbelthiere zu der Fauna von Abyssinien gehörig. Vögel. Folio. Frankfurt-am-Main.

Hirundo (Chelidon) pristoptera, sp. n. (p. 105) : figured (Taf. 39. fig. 2).
Cotyle paludibula, nom. err. pro *C. paludicola* (V.).

1836 [*circa*]. Hodgson, B. H. [Icones ineditæ.] Drawings of the Birds of Nepal. [In the Library of the Zoological Department, British Museum.] Folio.

A collection of excellent native paintings of birds. Hodgson's specific names are mostly founded on these Drawings.

Plate vi. *Hirundo nipalensis* (no. 329).
Plate vii. *Hirundo rupicola* (no. 330).
Plate viii. *Hirundo rustica* (no. 331).
Plate ix. fig. 1. *Hirundo subsoccata* (no. 332). [= *Cotile sinensis*, juv.]
Plate ix. fig. 2. *Hirundo minuta* (no. 333). [= *Cotile sinensis*, ad.]

Of these species Hodgson described *Hirundo nipalensis* and *H. rupicola*, but the two supposed species of *Cotile* he never fully characterized.

1836. Hodgson, B. H. Additions to the Ornithology of Nipal. Journ. As. Soc. Beng. v. pp. 770–781.

Hirundo nipalensis, sp. n. (p. 780). Figured in his 'Drawings,' Passeres, pl. vi. fig. 1 (no. 329).
Hirundo rupicola, sp. n. (p. 781). Figured in his 'Drawings,' pl. vii. [= *Biblis rupestris*.]

1837. Lafresnaye, A. de. Synopsis Avium ab Alcide d'Orbigny in ejus per Americanam meridionalem itinere, collectarum et ab ipso viatore necnon A. de Lafresnaye in ordine redactarum. Mag. de Zool. 1837, pp. 1–88, 1–16.

Hirundo patagonia, sp. n. (p. 69). [= *Atticora cyanoleuca* (V.).]
Hirundo andecola, sp. n. (p. 69). [= *Atticora cinerea* (Gm.).]

1837. Swainson, W. Birds of West Africa. 8vo. 12mo. Edinburgh, 1837. Pp. 263.

Hirundo leucosoma, sp. n. (p. 74).

1837. Gould, J. Exhibition of Fissirostral Birds from Mr. Darwin's collection. P. Z. S. 1837, p. 22.

Hirundo concolor, sp. n. Galapagos. [= *Progne concolor*.]
Hirundo frontalis, sp. n. Montevideo. [This is not *H. frontalis* of Quoy and Gaimard (*anteà*, p. xlviii), but is *Tachycineta leucorrhous* (V.).]

1837. Lesson, R. P. Histoire naturelle générale et particulière des Mammifères et des Oiseaux découverts depuis la mort de Buffon. Vol. viii. Oiseaux. 8vo. Paris, 1837. Pp. 511.

Biblis, gen. n. Type *B. rupestris*.

This generic name is preoccupied in Entomology (*Biblis*, Fabr. in Illig. Mag. Insekt. vi. p. 281, 1807). The name of *Ptyonoprogne* will therefore have to be employed for the species enumerated in the present work, viz., *P. rupestris*, *P. obsoleta*, *P. fuligula*, *P. anderssoni*, *P. rufigula*, *P. concolor*.

1838. Audubon, J. J. Ornithological Biography, or an account of the Habits of the Birds of the United States of America, accompanied by descriptions of the objects represented in the work entitled "Birds of America," etc. Vol. iv. 8vo. Edinburgh, 1838. Pp. xxiv, 618.

Hirundo serripennis described (p. 593) and separated as a species from the Sand-Martin (*Cotile riparia*).

1839. Schlegel, H., and Susemihl, J. C. & E. Die Vögel Europa's. 8vo. Stuttgart, 1839.

"*Hirundo beaussoneauti*, Temm.," figured. Lief. vi. Taf. 2. fig. 2; *H. rustica* figured. Lief. vi. Taf. 2. fig. 1; *H. urbica* figured. Lief. vi. Taf. 1. fig. 1; *H. rufula* figured. Lief. vi. Taf. 1. fig. 2.

1839. McClelland, John. List of Mammalia and Birds collected in Assam. P. Z. S. 1839, pp. 146–167.

Hirundo brevirostris, sp. n. (p. 155). [=*Collocalia brevirostris* (McClell.): *cf.* Hartert, Cat. B. Brit. Mus. xvi. p. 501.]

Hirundo brevicaudata, sp. n. (p. 156). [=*Cotile sinensis* (Gray).]

1840. Gould, J. Exhibition of fifty new Species of Australian Birds. P. Z. S. 1840, pp. 169–178.

Hirundo leucosternum, sp. n. (p. 172). [=*Cheramœca leucosternum*.]

1841. Gould, J. The Zoology of the Voyage of H.M.S. 'Beagle,' under the command of Captain Fitzroy, R.N., during the years 1832 to 1836. Edited and superintended by Charles Darwin.—Part III. Birds, by John Gould. 4to. London, 1841. Pp. 156.

Hirundo modesta described (p. 39). [=*Progne concolor*, Gould, 1837.] James Island, Galapagos Archipelago. Figured pl. 5.

1842. Lichtenstein, H. Verzeichniss einer Sammlung von Säugethieren und Vögeln aus dem Kaffernlande, nebst einer Käfer-Sammlung, welche am 14ten März 1842 durch den königl. gerichtlichen Auctions-Commissarius Rauch öffentlich meistbietend verkauft werden sollen. 8vo. Berlin, 1842. Pp. 24.

Hirundo rufifrons, sp. n. (p. 18; *nec* Stephens, *suprà*, p. xlv).

Hirundo fuligula, sp. n. (p. 18). [=*Biblis fuligula*.]

1842. Gould, J. Exhibition of thirty new Species of Australian Birds. P. Z. S. 1842, pp. 131–140.

Hirundo neoxena, sp. n. (p. 131).

Collocalia ariel, sp. n. (p. 132). [=*Petrochelidon ariel*.]

1842. Gould, J. Birds of Australia. Folio. Vol. ii.

Collocalia arborea described as a new species and figured (pl. 14). [=*Petrochelion nigricans.*] According to Mr. Waterhouse, this plate appeared in part ix., in the year 1842.

1842. Temminck, C. J., et Schlegel, H. Fauna Japonica, sive descriptio animalium, quæ in itinere per Japoniam, jussu et auspiciis superiorum qui summum in India Batava Imperium tenent, suscepto, annis 1823–30 collegit, notis, observationibus et adumbrationibus illustravit Ph. Fr. de Siebold; conjunctis studiis C. J. T. et H. S. Folio. Leyden, 1842. Pp. 141. Pls. lxxxix.

The *Hirundinidæ* are treated of on pp. 31–37.
Hirundo alpestris japonica, sp. n., p. 33, pl. 11.
Hirundo striolata, sp. n., Java, p. 33.
Hirundo puella, sp. n., Gold Coast, p. 34.
Hirundo pyrrhonota australis is the name proposed for the Tasmanian form of *Hirundo nigricans.*

1843. Guérin-Méneville, F. E. Oiseaux nouveaux découverts par MM. Ferret et Galinier pendant leur voyage en Abyssinie. Rev. Zool. 1843, pp. 321, 322.

Hirundo abyssinica, sp. n. [=*H. puella,* T. & S.]

1844. Schlegel, H. Revue critique des Oiseaux d'Europe. 8vo. Leide, 1844. Pp. cxxxv, 116.

Hirundo rustica orientalis (p. xviii). [=*H. savignii.*]

1844. Jerdon, T. C. Supplement to the Catalogue of the Birds of the Peninsula of India. Madras Journal, xiii. pp. 156–174.

Hirundo domicola, sp. n., p. 173. [=*H. javanica,* Sparrm.]
Hirundo inornata, sp. n., p. 173. [=*Biblis rupestris.*]

1844. Lichtenstein, H. Descriptiones Animalium quæ in itinere ad maris australis terras per annos 1772, 1773 et 1774 suscepto collegit, observavit, et delineavit Johannes Reinoldus Forster, nunc demum edita auctoritate et nupensis Academiæ Litterarum Regiæ Berolinæ. 8vo. Berlin, 1844. Pp. 424.

Hirundo hyemalis, Forster, p. 55. [=*Biblis fuligula* (Licht.).]
Hirundo peruviana, sp. n., p. 240. [=*Atticora cinerea* (Gm.).]
Hirundo pyrrholæma, sp. n., p. 241, Otahaitee. [=*H. tahitica,* Gm.]

1844. Boie, Fr. Auszäge aus dem 'System der Ornithologie.' Isis, 1844, pp. 164–197.

Pp. 164–178 are devoted to a review of the family *Hirundinidæ,* with which the Swifts are associated.

A few new names are given, such as :—
Atticora albiscapulata, Rüpp. [ex Rüpp. MSS.]. [=*Psalidoprocne pristoptera* (Rüpp.).]
Atticora, gen. n., p. 172. Type apparently *A. fasciata* (Gm.).
"*Hirundo rusticoides,* Kuhl," Java, p. 174. [=*H. gutturalis,* Scop.]
Cecropis striolata, Kuhl in litt. (p. 174). [=*H. striolata,* T. & S., *anteà,* p. lii.]

1845. Rüppell, E. Systematische Uebersicht der Vögel Nord-Ost-Afrika's, nebst Abbildung und Beschreibung von funfzig Theils unbekannten, Theils noch nicht bildlich dargestellten Arten. 8vo. Frankfurt-a.-M., 1845. Pp. vii, 140. Taf. 1–50.

Cecropis melanocrissus, sp. n. (p. 17, Taf. 5).
Cecropis striolata, sp. n. (*nec* T. & S. : p. 18, Taf. 7). [=*Hirundo puella,* T. & S.]

1845. Gray, G. R. The Genera of Birds, comprising their generic characters, a notice of the habits of each Genus, and an extensive list of Species referred to their several Genera. Illustrated by D. W. Mitchell. Vol. i. Folio. London, 1844–49.

The *Hirundinidæ* occupy pp. 53–60, and are divided into Swifts (*Cypselinæ*), pp. 53–56, and Swallows (*Hirundininæ*), pp. 57–60. Both these subfamilies were published in the year 1845. The genus *Hirundo* contains 48 species, of which one, *H. nigrita,* is mentioned for the first time, but no description is given, though it is well figured (pl. xx.). *Atticora* contains 4 species, *Progne* 6 species, *Cotile* 7 species, and *Chelidon* 1 species. Plate xxi. gives figures of structural details.

1847. Gosse, P. The Birds of Jamaica. 8vo. London, 1847. Pp. x, 447.

Hirundo pœciloma, sp. n., p. 64. [=*Petrochelidon fulva* (V.).]
Hirundo euchrysea, sp. n. (p. 68).

1847. Hartlaub, G. Systematischer Index zu Don Felix de Azara's Apuntamientos para la historia natural de los páxaros del Paraguay y Rio de la Plata. Sm. 4to. Bremen, 1847. Pp. vi, 29.

Gives the scientific names bestowed on Azara's species.

1848. Peale, Titian. United States Exploring Expedition : Birds. Folio. 1848.

Hirundo ruficollaris, sp. n. (p. 175), Peru.

1848. Gray, G. R. List of the Specimens in the Collection of the British Museum. Part II. Section I. Fissirostres. 12mo. London, 1848. Pp. 80.

The British Museum in 1848 contained forty-three species of Swallows, according to Mr. Gray. Some very useful synonymy was compiled in this little work, and the wrong identifications were very few in number, the specimens of *H. melanoleuca,* Gray (*nec* Neuwied), p. 26, being really referable to *H. cyanoleuca,* V. (p. 27), while *Progne modesta,* Gray (*nec* Gould), was *P. furcata.*

1849. Gosse, P. H. Illustrations of the Birds of Jamaica.

Hirundo euchrysea figured (pl. xii.).

1849. Blyth, E. A Supplementary Note to the Catalogue of Birds in the Asiatic Society's Museum. Journ. As. Soc. Beng. xviii. pp. 800–821.

Hirundo hyperythra, sp. n. (p. 814), Ceylon.

1849. Strickland, H. E. "*Hirundo albigularis*." Contr. Orn. 1849, p. 17, pl. 3.

Hirundo albigularis, sp. n. (p. 17); figured, plate iii.

1850. Reichenbach, C. L. Avium Systema Naturale. Die natürliche System. 4to. Dresden, 1850. Taf. i.–c.

Ptyonoprogne, gen. n. (Taf. lxxxvii. fig. 6). Type *P. rupestris*. [=*Biblis*, Less., 1837.]

1850. Sundevall, C. J. Foglar från Södra Africa. Œfversigt K. Vet.-Akad. Förh. Stockholm, 1850, pp. 96–111.

Hirundo semirufa, sp. n. (p. 107). Upper Caffraria.
Hirundo dimidiata, sp. n. (p. 107). Upper Caffraria.
Hirundo atrocærulea, sp. n. (p. 107). Lower Caffraria.
Hirundo griseopyga, sp. n. (p. 107). Port Natal.
Hirundo spilodera, sp. n. (p. 108). [=*Petrochelidon spilodera*.]
Hirundo holomelas, sp. n. Port Natal. [Referred to the genus *Psalidoprocne* by Sclater, P. Z. S. 1864, p. 108.]

1850. Cabanis, Dr. J. Museum Heineanum. Verzeichniss der ornithologischen Sammlung des Oberamtmann Ferdinand Heine auf Gut St. Bernard von Halberstadt. Mit kritischen Anmerkungen und Beschreibung der neuen Arten, systematisch bearbeitet. I. Theil. Die Singvögel. 8vo. Halberstadt, 1850–51. Pp. 233.

The *Hirundinidæ* occupy pp. 46–51, and this year marks an epoch in the history of the Family, for in the 'Museum Heineanum' Cabanis described no less than four new genera and three new species, all of which, save his *Ps. cypselina*, are fully recognized by ornithologists. The genera were :—

Petrochelidon (p. 47). Type *P. melanogaster* (Sw.).
Tachycineta (p. 48). Type *T. thalassinus* (Sw.).
Psalidoprocne (p. 48). Type *P. cypselina*, sp. n. [=*P. holomelæna* (Sund.)].
Cheramœca (p. 49). Type *C. leucosternum* (Gould).
Cotile minor (p. 49) and *C. obsoleta* (p. 50), spp. nn., N.E. Africa.
Petrochelidon meyeni [nom. emend. pro *Hirundo leucopyga*, Meyen (*nec* Licht.)], p. 48.

1850. Cassin, John. Descriptions of new Species of Birds, specimens of which are in the Collection of the Academy of Natural Sciences of Philadelphia. Proc. Philad. Acad. 1850, pp. 56–59.

Atticora hamigera, sp. n. (p. 58). Natal. [=*Psalidoprocne holomelæna* (Sund.).] Figured pl. xii. fig. 2.

Hirundo scapularis, sp. n. (p. 59). [=*H. dimidiata,* Sund.] Figured pl. xii. fig. 1.

It seems to us probable that Cassin's names for these two species were published before those of Sundevall, though the general custom of quotation has been against this conclusion.

1850. Cassin, John. Descriptions of new Species of Birds of the Genera *Paradisea*, *Pastor*, and *Buceros*, and a proposition to rename others of the genera *Alcyone* and *Hirundo*. Tom. cit. p. 69.

Hirundo gouldi, nom. emend. pro *Hirundo frontalis,* Gould (nec Quoy & Gaim.). [=*Tachycincta leucorrhous* (V.).]

1850. Bonaparte, C. L. Conspectus Generum Avium. Vol. i. 8vo. Lugdini Batavorum, 1850. Pp. 543.

Hirundo korthalsi, sp. n. "Patria incerta." The type is in the Leyden Museum, and the species is *H. puella,* T. & S. *Cf.* Sharpe, Cat. B. Brit. Mus. x. p. 155.

"*Herse,* Less." (p. 341), is adopted as a genus for an assemblage of Swallows. It is not equivalent to *Herse* of Lesson (Compl. Buff. viii. Ois. p. 496).

1851. Jardine, W. Birds of Western Africa. Contr. Orn. 1851, p. 141.

Hirundo gordoni, sp. n. Gold Coast.

1851. Verreaux, Jules et Edouard. Descriptions d'espèces nouvelles, rares ou peu connues d'oiseaux du Gabon (Afrique Occidentale). Rev. et Mag. de Zool. 1851, pp. 306–317.

Atticora melbina, sp. n. (p. 310). [=*Hirundo griseopyga,* Sund.]

1853. Cassin, J. Descriptions of new Species of *Hirundinidæ* and *Psittacidæ*, specimens of which are in the Collection of the Academy of Natural Sciences of Philadelphia. Proc. Acad. Nat. Sci. Philad. 1853, pp. 369–373.

Petrochelidon murina, sp. n. (p. 370). Ecuador. [=*Atticora cinerea* (Gm.).]
Petrochelidon? tibialis, sp. n. Habitat unknown. [=*Atticora tibialis.*]
Cecropis badius, sp. n. (p. 371). Malacca?

1853. Cassin, J. Catalogue of the *Hirundinidæ* in the Collection of the Academy of Natural Sciences of Philadelphia. 8vo. Philadelphia, 1853. Pp. 13.

36 species of Swallows are catalogued, with some useful synonymy.

1853. Brehm, A. E. Etwas über den Zug der Vögel in Nord-Ost-Afrika. J. f. Orn. 1853, pp. 451–457.

Cotyle cahirica, sp. n. (p. 452). [=*Biblis obsoleta.*]

1854. Lichtenstein, H. Nomenclator Avium Musei Zoologici Berolinensis. 8vo. Berlin, 1854. Pp. viii, 123.

43 species enumerated. *Hirundo dichroa* (p. 60) and *H. moschata* (p. 60) from South Africa.

Chelidon leucopyga (p. 61) = *Tachycineta leucorrhoa*. *Cotyle serratipennis* (p. 61), nom. emend. pro *C. serripennis*. *Hirundo dichroa* has been referred by Finsch and Hartlaub to *Hirundo dimidiata* (Vög. Ostafr. p. 133).

Cotyle albiventris (p. 61) = *C. paludicola* (V.).

Cotyle littoralis, a MSS. name of Hemprich and Ehrenberg in the Berlin Museum, is adopted for the first time for the Egyptian Sand-Martin, but no description is given.

1854. Moore, F. Notice of a new Indian Swallow. P. Z. S. 1854, p. 104, pl. lxiii.

Delichon, gen. n. Type *D. nipalensis*, sp. n. (ex Hodgs. MSS.)

1854. Bonaparte, C. L. Notes sur les collections rapportés en 1853, par M. A. Delattre, de son voyage en Californie et dans le Nicaragua. C. R. xlviii. pp. 650–665.

Uromitus, gen n. (p. 652), "pour les espèces à queue filamenteuse."

1854. Horsfield, T., and Moore, F. A Catalogue of the Birds in the Museum of the Hon. East India Company. Vol. i. 8vo. London, 1854. Pp. xx, 451.

The *Hirundinidæ* are catalogued on pp. 91–98. Most accurate synonymy, the work of Mr. Moore, is given.

1855. Blyth, E. Report of Curator. J. A. S. Beng. xxiv. pp. 469–481.

Hirundo fluvicola, sp. n. (p. 471) [ex Jerdon MSS.].

1855. Hartlaub, G. Beschreibung einiger neuen von Herrn H. S. Pel, holländischen Residenten an der Goldküste, daselbst gesammelten Vögelarten. J. f. O. 1855, pp. 353–360.

Atticora obscura, sp. n. (ex Temm. MSS.). Gold Coast. [= *Psalidoprocne obscura* (Hartl.).]

1856. Gould, J. Exhibition of Birds collected by Mr. John Macgillivray during the Voyage of H.M.S. 'Rattlesnake.' P. Z. S. 1856, pp. 135–138.

Hirundo subfusca, sp. n. (p. 137). [= *H. tahitica*.]

1857. Cassin, J. Catalogue of Birds collected on the River Muni, Western Africa, by Mr. P. B. du Chaillu in 1856, with notes and descriptions of new Species. Proc. Acad. Nat. Sci. Philad. 1857, pp. 33–40.

Atticora nitens, sp. n. (p. 38).

1857. Sundevall, C. J. Kritisk Framställning af Fogelarterna uti äldre ornithologiska arbeten. K. Vet.-Akad. Handl. ii. no. 3. 4to. Pp. 60.

In the critique on Levaillant's 'Oiseau d'Afrique' all the Swallows of the latter work are identified (pp. 51, 52).

Hirondelle rousseline (pl. 245. fig. 1). Artefact! Probably founded on *H. cucullata*.

Hirondelle à front roux (pl. 245. fig. 2). The figure very inaccurate, but doubtless intended for *H. albigularis*.
Hirondelle fauve (pl. 246. fig. 1) = *Cotyle fuligula* (Licht.).
Hirondelle de marais (pl. 246. fig. 2) = *Cotyle paludicola* (V.).
Hirondelle huppée (pl. 247) = *Hirundo cristata*, V. Artefact?

1857. Bonaparte, C. L. Parallelismo fra la Tribù dei Cantori Fissirostri e quella dei Volucri Hianti e dei notturni ovvero insidenti di C. L. Principe Bonaparte. Rivista Contemporanea, Torino, Feb. 1857. Pp. 8.

Phedina, gen. n.—Type *P. borbonica* (Gm.).
Hemicecropis, gen. n.—Type *H. leucosoma* (Swains.).
Pristoptera, gen. n.—Type *P. pristoptera* (Rüpp.).

1858. Sclater, P. L. On a collection of Birds received by M. Auguste Sallé from Oaxaca, in Southern Mexico. P. Z. S. 1858, pp. 294–305.

Petrochelidon swainsoni (p. 296), nom. emend. pro *Hirundo melanogaster*, Swains.

1858. Gould, J. Descriptions of two new Species of the Family *Hirundinidæ*. P. Z. S. 1858, p. 355.

Atticora pileata, sp. n. (p. 355), Guatemala.
Chelidon cashmiriensis, sp. n., Cashmere.

1858. Baird, S. F. The Birds of North America. 4to. Philadelphia, 1858. Pp. lvi, 1005.

Stelgidopteryx, gen. n. (p. 312).—Type *S. serripennis*.

1858. Verreaux, J. Ueber drei neue Vögel Westafrika's. J. f. O. 1858, pp. 41–43.

Hirundo lucida, sp. n. (p. 42), Casamanse River.

1858. Boie, F. Bemerkungen, Beobachtungen und Anfragen. J. f. O. 1858, pp. 359–366.

Lillia, gen. n. (p. 364).—Type *L. alpestris* (Pall.).

1859. Bryant, H. A List of Birds seen at the Bahamas from January 20 to May 14, 1859, with descriptions of new or little-known Species. Proc. Bost. Soc. Nat. Hist. vii. pp. 102–134.

Hirundo cyaneoviridis, sp. n. (p. 111).

1859. Sclater, P. L. On a series of Birds collected in the vicinity of Jalapa in Southern Mexico. P. Z. S. 1859, pp. 362–369.

Cotyle fulvipennis, sp. n. (p. 364). [= *Stelgidopteryx serripennis*, juv.]

1860. Hartlaub, G. Systematische Uebersicht der Vögel Madagascars. J. f. O. 1860, pp. 81–112.

Phedina madagascariensis, sp. n. (p. 83).

1861. Burmeister, H. Reise durch die La Plata-Staaten. Band ii. Halle, 1861, Pp. vi, 538.

Atticora hemipyga, sp. n. (p. 479), Mendoza. [=*Atticora cyanoleuca* (V.).]

1861. Heuglin, Dr. Th. von. Beiträge zur Ornithologie Nord-Ost-Afrika's. J. f. O. 1861, pp. 417–431.

Chelidon albigena, sp. n., Bogos Land.

1862. Sclater, P. L. Catalogue of a Collection of American Birds belonging to P. L. S. 8vo. London, 1862. Pp. xvi, 338.

Microchelidon, gen. n. (p. 39).—Type *M. tibialis* (Cass.).

Neochelidon, nom. emend. (p. xvi), pro *Microchelidon* (Scl. *ut suprà*, nec Reichenb.).

1862. Hartlaub, G., in J. J. Monteiro's 'Notes on Birds collected in Angola in 1861.' Ibis, 1862, pp. 333–342.

Hirundo monteiri, sp. n. (p. 340). Figured (pl. xi.).

1862. Swinhoe, Robert. On some Tientsin Birds collected by Mr. Fleming, R.A., in the possession of Mr. Whitely. P. Z. S. 1862, p. 320.

Chelidon blakistoni, sp. n. (p. 320), Hakodadi. [=*C. dasypus*, Bp., 1850.]

Chelidon whitelyi, sp. n. (p. 320), Pekin. [=*C. lagopus* (Pall.).]

1862. Heuglin, Th. v. Beiträge zur Ornithologie Nord-Ost-Afrika's. J. f. O. 1862, pp. 285–307.

Atticora cypseloides, sp. n. (p. 297), Central Abyssinia. [=*Hirundo griseopyga*, Sund.]

1863. Lawrence, G. N. Catalogue of a Collection of Birds, made in New Granada, by James McLeannan, Esq., of New York, with Notes and Descriptions of new Species. Part IV. Ann. Lyc. N. Y. viii. pp. 1–13.

Petrochelidon albilinea, sp. n. (p. 2).

1863. Lawrence, G. N. Descriptions of eight new Species of Birds from the Isthmus of Panama. Ibis, 1863, pp. 181–185.

Stelgidopteryx uropygialis, sp. n. (p. 181).

1863. Salvin, O. Descriptions of thirteen new Species of Birds discovered in Central America by Frederick Godman and Osbert Salvin. P. Z. S. 1863, pp. 186–192.

Petrochelidon littorea, sp. n. (p. 189). [=*Tachycineta albilinea* (Lawr.).]

1864. Sclater, P. L. On the Birds collected by Capt. J. H. Speke during the East-African Expedition. P. Z. S. 1864, pp. 106–115, pl. xiv.

Psalidoprocne albiceps, sp. n. (p. 108), from Usui, Central East Africa.

1864. Jerdon, T. C. Birds of India. Vol. iii. 8vo. Calcutta, 1864. Pp. viii, 876, xxxii.

Hirundo tytleri, sp. n. (p. 870), Dacca.

1865. Baird, S. F. Review of American Birds in the Museum of the Smithsonian Institution. Part I. 8vo. Washington, 1864–72. Pp. vi, 478.

This is one of the most important essays ever published on the Swallows, and has been the foundation of all subsequent classifications of the Family, the account of which occupies pp. 267–320.

Progne elegans, sp. n. (p. 275), Buenos Ayres.

Progne cryptoleuca, sp. n. (p. 277), Cuba.

Progne furcata, sp. n. (p. 278), Chili.

Phæoprogne, subgen. n. (p. 283).—Type *P. fusca* (V.).

Callichelidon, subgen. n. (p. 303), ex Bryant, MSS.—Type *C. cyaneoviridis*, Bryant.

Notiochelidon, subgen. n. (p. 306).—Type *Atticora pileata* (Gould).

Pygochelidon, subgen. n. (p. 308).—Type *Atticora cyanoleuca* (V.).

Atticora cyanoleuca, var. n. *montana* (p. 310), Costa Rica.

Stelgidopteryx fulvigula, sp. n., Costa Rica. [=*S. uropygialis*, juv.]

1865. Gould, J. Handbook to the Birds of Australia. Vol. i. 8vo. London, 1865. Pp. viii, 636.

Hylochelidon, gen. n. (p. 110).—Type *H. nigricans* (V.). [=*Petrochelidon*, Cab.]

Lagenoplastes, gen. n. (p. 112).—Type *L. ariel* (Gould). [=*Petrochelidon*.]

Hirundo fretensis, sp. n. (p. 110), Torres Straits. [=*H. gutturalis*, Scop.]

1866. Brehm, A. E. Verzeichniss der Sammlung C. L. Brehm's.

We have never seen this book and quote it on Dresser's authority. It apparently contains a number of nominal species, to which trinomial names are given, all of which ought to have been suppressed instead of published.

Hirundo boissoneauti latirostris and *H. b. microrhynchus* (p. 3) teste Dresser.

1866. Blyth, E. Ornithology of India—a Commentary on Dr. Jerdon's 'Birds of India.' Ibis, 1866, pp. 336–376.

Lagenoplastes empusa, sp. n., India (ex Gould, MSS.). [=*Petrochelidon fluvicola*.]

1866. Gurney, John Henry, Jun. Letter from. Ibis, 1866, p. 423.

Hirundo riocouri in Durham. Afterwards recognized as *H. rustica*, ptil. æstiv. (*id.* Ibis, 1875, p. 519).

1866. Hartlaub, G., in Dr. Dohrn's Synopsis of the Birds of Ilha do Principe, with some remarks on their habits, and descriptions of new Species. P. Z. S. 1866, pp. 324–332.

Cotile eques, sp. n. (p. 325). [=*C. cincta* (Bodd.).]

1866. Bryant, H. A list of the Birds of St. Domingo, with descriptions of some new Species or Varieties. Proc. Bost. Soc. 1866, xi. pp. 89–98.

Hirundo euchrysæa, var. *dominicensis* (p. 95), St. Domingo. [=*Hirundo sclateri*, Cory.]

1867. Beavan, R. C. The Avifauna of the Andaman Islands. Ibis, 1867, pp. 316–334.

Hirundo andamanensis, Tytler, sp. n. (p. 316). [=*H. gutturalis*, Scop.]

1867. Bocage, J. V. Barboza du. Aves das possessões Portuguezas da Africa occidental que existem no Museum de Lisboa. Jorn. Lisb. i. pp. 129–153.

Hirundo anchietæ, sp. n. (p. 150). [=*Hirundo smithii*, Leach.]

1868. ——. The same. Terceira Lista. Jorn. Lisb. ii. pp. 38–50.

Hirundo angolensis, sp. n. (p. 47), Huilla, Benguela.

1868. Gould, J. Birds of Asia. Part xx.

Hypurolepis, gen. n.—Type *H. domicola* (Jerd.). [=*Petrochelidon*.]

1868. Hartlaub, G., in J. H. Gurney's Notes on Mr. Layard's 'Birds of South Africa.' Ibis, 1868, pp. 134–164.

Hirundo alfredi, sp. n. (p. 152, pl. 4), Transvaal. [=*Petrochelidon spilodera* (Sund.).]

1869. Baldamus, E. Kaliologische und oologische Studien. J. f. O. 1869, pp. 403–409.

The Swallows are classified according to the colour of their eggs and mode of nest-building. *Hirundo alfredi* is a *Petrochelidon* (p. 405).

Antrochelidon, gen. n.—Type *A. nigricans* (V.).

1869. Heuglin, Th. von. Ornithologie Nordost-Afrika's, der Nilquellen- und Küsten-Gebiete des rothen Meeres und des nördlichen Somal-Landes. Th. i. Abth. i. 8vo. Cassel, 1869. Pp. cxvi, 416. Tab. i.–xiv.

Atticora griseopyga figured (tab. vii.)

Hirundo fuscicapilla, sp. n. [=*H. smithii*, juv.]

This part of Heuglin's work is said to have been published on the 1st of November, 1869, and yet it contains a complete reference to *Hirundo domicella* of Finsch and Hartlaub, who must have shown proofs to Heuglin, as they did to us in 1870.

1869. Gray, G. R. Hand-list of Genera and Species of Birds, distinguishing those contained in the British Museum. Part i. 8vo. London, 1869. Pp. xx, 404.

The *Hirundinidæ* (pp. 68–75) extend from nos. 786–896. The genera *Hirundo, Atticora, Cotile, Chelidon,* and *Progne* are admitted—*Psalidoprocne* being placed under *Hirundo,* and *Stelgidopteryx* under *Cotile.* Every valid species which was wanting to the collection of the British Museum in 1871 has since been added.

1869. Sharpe, R. B. Letter from. Ibis, 1869, p. 461.

Waldenia, gen. n.—Type *W. nigrita* (Gray).

1870. Finsch, O., and Hartlaub, G., in Baron Carl Claus von der Decken's 'Reisen in Ost-Afrika's. Band vi. Die Vögel Ost-Africa's.' 4to. Leipzig and Heidelberg, 1870. Pp. 898.

Hirundo domicella, sp. n. (p. 143), Kasamanse.

1870. Sharpe, R. Bowdler, and Dresser, H. E. On some new or little-known points in the Economy of the Common Swallow. P. Z. S. 1870, pp. 244–249.

These remarks on the winter moulting of the Swallow formed part of our general essay on the Ethiopian Region (*infrà*). As we were at the time joint authors of the 'Birds of Europe,' that portion of our paper referring to the Chimney-Swallow of Europe was, at Mr. Dresser's request, published separately, and his name added as author.

1870. Sharpe, R. Bowdler. On the *Hirundinidæ* of the Ethiopian Region. P. Z. S. 1870, pp. 286–326.

The family *Hirundinidæ* divided into Smooth-winged Swallows (*Hirundininæ*) and Rough-winged Swallows (*Psalidoprocninæ*). 38 species known from Africa and Madagascar in 1870, of which *Cotile eques* has since been united to *C. cincta,* leaving 37 species as valid.

1871. Swinhoe, R. A revised Catalogue of the Birds of China and its Islands, with descriptions of new Species, References to former Notes, and occasional Remarks. P. Z. S. 1871, pp. 337–423.

Cecropis arctivitta, sp. n., p. 346. [=*Hirundo nipalensis,* Hodgs.]

1873. Hume, A. O. Novelties. Stray F. i. p. 1.

Ptionoprogne pallida, sp. n., Sindh. [=*Biblis obsoleta.*]

1875. ——. A First List of the Birds of Upper Pegu. Str. F. iii. p. 43.

Cotile obscurior, sp. n., Thayetmyo. [Not distinct from *C. sinensis.*]

1876. Sharpe, R. Bowdler, and Bouvier, A. Études d'Ornithologie Africaine.—Catalogue d'une collection recueillie à Landana et Chinchonxo (Congo) par M. Louis Petit pendant les mois de Janvier, Février, et Mars, 1876. Bull. Soc. Zool. France, i. pp. 36–53.

Psalidoprocne petiti, sp. n. (p. 38), Landana. Figured (pl. ii.).

1876. Walden, Viscount. Notes on the late Colonel Tickell's Manuscript Work entitled 'Illustrations of Indian Ornithology.' Ibis, 1876, pp. 336–357.

Krimnochelidon, Tickell, gen. n. (p. 356).—Type *K. concolor*. [=*Biblis*.]

1876. Cooper, J. G. Californian Garden Birds. American Naturalist, x. p. 91.

Hirundo bicolor, var. *vespertina*, a name proposed for the Western White-bellied Swallow. [=*Tachycineta bicolor*.]

1877. Hume, A. O. Remarks on some Species of the Subgenus *Lillia*. Str. F. v. pp. 254–267.

Lillia intermedia, sp. n., (p. 263), Assam. [=*Hirundo daurica*, L.]
Lillia substriolata, sp. n. (p. 264), Cachar. [=*Hirundo daurica*, L.]
Cecropis archetes, sp. n. (p. 266), Malacca. [=*Hirundo badia*, Cass.]

1877. Bocage, J. V. Barboza du. Espèces nouvelles d'Angola. Part III. Jorn. Lisb. vi. pp. 158–161.

Hirundo nigrorufa, sp. n. (p. 158), Caconda, Benguela.

1878. ——. The same. Part V. Jorn. Lisb. vi. pp. 254–280.

Hirundo rufigula, sp. n., Benguela. [=*Petrochelidon rufigula* (Bocage).]

1878. Coues, E. Birds of the Colorado Valley, a repository of scientific and popular information concerning North-American Ornithology.—Part I. Passeres to Laniidæ. Bibliographical Appendix. 8vo. Washington, 1878. Pp. xvi, 807.

Chapter xiv. (pp. 364–450) is devoted to the Swallows, and no better account of the Family has ever appeared. The classification, migration, and literature of the family are all treated of, with excellent synonymy and account of the habits of the American species.

Iridoprocne, subgen. n. (p. 412).—Type *I. bicolor*.

1880. Coues, E. Third Instalment of American Ornithological Bibliography. Bull. U. S. Geol. Surv. v. pp. 521–528.

1880. Taczanowski, L. Liste des Oiseaux recueillis au nord du Pérou par M. Stolzmann pendant les derniers mois de 1878 et dans la première moitié de 1879. P. Z. S. 1880, pp. 189–215.

Hirundo leucopygia, sp. n. (p. 192). [=*Tachycineta albilinea* (Lawr.).]

1881. Bocage, J. V. Barboza du. Ornithologie d'Angola. Roy. 8vo. Lisbonne, 1881. Pp. xxxii, 576. Pls. x.

Hirundo ambigua, sp. n. (p. 186). [=*Hirundo albigularis*, Strickl.]

1882. Sharpe, R. Bowdler. On a new Species of Sand-Martin (*Cotile*) from Madagascar. Journ. Linn. Soc., Zool. xvi. pp. 322, 323.

Cotile cowani, sp. n., Betsileo.

1882. Stejneger, L. On some generic and specific appellations of North-American and European Birds. Proc. U. S. Nat. Mus. v. pp. 28–43.

Chelidon, Forster, is proposed (p. 32) to supersede *Hirundo*, Linn. (a composite genus), for the Chimney-Swallows; *Hirundo*, Forster, to supersede *Chelidon*, Boie, for the House-Martins; and *Clivicola*, Forster, for *Cotyle*, Boie, for the Sand-Martins.

1883. Ridgway, R. Descriptions of some Birds supposed to be undescribed from the Commander Islands and Petropaulovski, collected by Dr. Leonard Stejneger. Proc. U. S. Nat. Mus. vi. pp. 90–96.

Hirundo saturata, sp. n. (ex Stejneger, MSS.), p. 95, Petropaulovski. [=*Hirundo tytleri*, Jerd.]

1883. Dybowski, B. Remarques sur les Oiseaux du Kamtschatka et des îles Comandores. Bull. Soc. Zool. France, viii. pp. 351–370.

Hirundo kamtschatica, sp. n., p. 356. [=*Hirundo gutturalis*, Scop.]

1883. Seebohm, H. Notes on *Hirundo rufula* and its allies, with description of a supposed new Subspecies. Ibis, 1883, p. 167–169.

Hirundo scullii, sp. n. [Is a small race of *Hirundo rufula*.]

1884. Cory, C. B. Descriptions of several new Birds from Santo Domingo. Auk, 1884, pp. 1–5.

Hirundo sclateri, sp. n. (p. 2).

1884. Petit, L. Notice sur l'Hirondelle de Pouchet. Bull. Soc. Zool. France, ix. pp. 79, 80.

Hirundo poucheti, sp. n., p. 79. [=*Hirundo griseopyga*, Sund.]

1884. Fischer, G. A., und Reichenow, A. Neue Vogelarten aus dem Massailand (inneres Ostafrika). J. f. O. 1884, p. 53.

Cotile rufigula, sp. n., Lake Naiwascha.

1884. Salvadori, T. Uccelli dello Scioa e della regione fra Zeila e lo Scioa. Ann. Mus. Civic. Genov. (2) i. pp. 21–269.

Psalidoprocne antinorii, sp. n. (p. 123), Denz, Shoa.

1884. Dybowski, B., et Taczanowski, L. Liste des Oiseaux du Kamtschatka et des isles Comandores. Bull. Soc. Zool. France, ix. pp. 145–161.

Hirundo rustica borealis, subsp. n. (p. 152). [=*Hirundo gutturalis*, Scop.]
Hirundo rustica baicalensis, subsp. n. (p. 152). [=*Hirundo tytleri*, Jerd.]

1885. Sharpe, R. Bowdler. Catalogue of the Passeriformes, or Perching Birds, in the Collection of the British Museum. Fringilliformes: Part I. Containing the Families *Dicæidæ*, *Hirundinidæ*, *Ampelidæ*, *Mniotiltidæ*, and *Motacillidæ*. 8vo. London, 1885. Pp. xiv, 682. Pls. xii.

The Swallows are described on pp. 85–210. The same arrangement of the two subfamilies, first proposed in 1870, is adhered to. The number of genera and species is as follows:—1. *Chelidon*, Boie (6 species). 2. *Cotile*, Boie (12 species). 3. *Tachycineta*, Cab. (7 species). 4. *Phedina*, Bp. (2 species). 5. *Hirundo*, L. (38 species). 6. *Cheramœca*, Cab. (1 species). 7. *Progne*, Boie (7 species). 8. *Atticora*, Boie (7 species). 9. *Petrochelidon*, Cab. (10 species). 10. *Psalidoprocne*, Cab. (7 species). 11. *Stelgidopteryx*, Baird (3 species).

Cotile shelleyi, sp. n. (p. 100), Egypt.

Petrochelidon timoriensis, subsp. n. (p. 192), Timor.

1885. Sharpe, R. Bowdler, and Wyatt, Claude W. A Monograph of the *Hirundinidæ*, or Family of Swallows. Part I. 4to. London, September 1885.

The species figured are *Hirundo semirufa, H. leucosoma, H. smithii, H. angolensis, Psalidoprocne obscura, Hirundo striolata* (plate only).

1885. ——. The same. Part II. December 1885.

Contents:—*Hirundo gordoni* (no plate), *H. senegalensis, H. æthiopica, H. domicella, Chelidon dasypus, Cotile fuligula, Chelidon urbica*, juv. (plate only).

1885. Stejneger, L. Results of Ornithological Explorations in the Commander Islands and in Kamtschatka. Bull. U.S. Nat. Mus. no. 29, pp. 382, pls. i.–ix.

Admirable critical notes on Swallows are given (pp. 267–272, 346–348), especially on the *H. tytleri* group, the notes on the migration of the species being of great importance.

1886. Oustalet, E. Notice sur quelques Oiseaux nouveaux du Congo. Le Naturaliste, 1886, pp. 299–300.

Phedina brazzæ, sp. n. (p. 300).

1886. Giglioli, E. H. Avifauna Italica. Elencho delle Specie di Uccelli stazionarie o di passaggio in Italia. 8vo. Firenze, 1886. Pp. 1–626.

Chelidon cashmiriensis (p. 187) and *Cotile obsoleta* (p. 190) are here introduced into the European fauna (*cf.* Salvad. Elenc. Ucc. Ital. pp. 81, 84).

1886. Stejneger, L. On a collection of Birds made by Mr. M. Namiye in the Liu Kiu Islands, Japan, with descriptions of new Species. Proc. U. S. Nat. Mus. ix. pp. 634–646.

Chelidon namiyei, sp. n. (p. 646).

1886. Sharpe, R. Bowdler, and Wyatt, Claude W. Monograph of the *Hirundinidæ*. Parts III., IV. July 1886.

Contents:—*Psalidoprocne holomelæna, P. pristoptera, Hirundo smithii, H. nigrorufa, H. cucullata, H. atrocærulea, H. melanocrissa, H. griseopyga, H. nigrita, Petrochelidon ariel, Cotile concolor, C. obsoleta.*

1887. ——. The same. Parts V., VI. June 1887.

Contents:—*Petrochelidon ruficollaris, P. nigricans, P. rufigula, P. timoriensis* (no plate), *P. fulva, Tachycineta leucorrhous, T. albilinea, Cotile rufigula, C. minor, C. anderssoni*, sp. n., Damara-Land, *Psalidoprocne antinorii, Atticora pileata, Progne chalybea, Hirundo neoxena.*

1887. Reichenow, A. Ueber eine Vogelsammlung aus dem Kongo-Gebiet. J. f. O. 1887, pp. 299–309.

Cotile congica, sp. n. (p. 300), Manyanga.

1887. Shelley, G. E. On a collection of Birds made by Mr. H. H. Johnston in the Cameroons Mountains. P. Z. S. 1887, p. 123.

Psalidoprocne fuliginosa, sp. n. (p. 123), from Cameroons, W. Africa.

1888. Salvin, O. A List of Birds of the Islands of the Coast of Yucatan and of the Bay of Honduras. Ibis, 1888, pp. 241–265.

Hybrid between *Petrochelidon swainsoni* and *Hirundo erythrogastra*, from Cozumel (p. 256).

1888. Sharpe, R. Bowdler, and Wyatt, Claude W. *Ut suprà.* Parts VII., VIII. May 1888.

Contents:—*Psalidoprocne petiti, P. albiceps, P. fuliginosa, P. nitens, Chelidon lagopus, Hirundo sclateri, H. smithii* (plate only), *Atticora melanoleuca, A. fucata, Petrochelidon swainsoni, P. fluvicola, Stelgidopteryx ruficollis.*

1889. ——. The same. Parts IX., X. March 1889.

Contents:—*Phedina borbonica, P. madagascariensis, Cotile cowani, Progne furcata, P. concolor, P. domestica* (no plate), *P. dominicensis, Chelidon cashmiriensis, Hirundo rufula, H. monteiri, H. albigularis, Tachycineta meyeni, Atticora tibialis*, Map of *Psalidoprocne.*

1889. ——. The same. Parts XI., XII. December 1889.

Contents:—*Cheramœca leucosternum, Hirundo badia, H. hyperythra, H. puella, H. dimidiata, H. savignii, Cotile sinensis, Tachycineta cyaneoviridis, T. bicolor, Stelgidopteryx uropygialis, Atticora fasciata, A. cyanoleuca, Progne tapera*, Maps of *Progne, Tachycineta*, and *Stelgidopteryx.*

1889. Reichenow, A. Bericht Allg. deutsch. orn. Gesellsch., March 1889. J. f. O. 1889, pp. 185–189.

Chelidonaria (p. 187), nom. emend. pro *Chelidon*, Forst. (*anteà*, p. xliv).

1889. Reichenow, A. Ueber eine Vögelsammlung aus Ostafrika. J. f. O. 1889, pp. 264–286.

Psalidoprocne petiti orientalis, subsp. n. (p. 277), Usambara Hills.

1889. Brewster, W. Descriptions of supposed new Birds from Western North America. Auk, vi. pp. 85–98.

Progne subis hesperia, subsp. n. (p. 92), California.

Founded on the female birds. The author adds a query as to the validity of the subspecies; but typical examples are easy to distinguish, though intermediate examples between *P. hesperia* and *P. purpurea* occur.

1890. Sharpe, R. Bowdler, and Wyatt, Claude W. *Ut suprà.* Parts XIII., XIV. December 1890.

Contents:—*Stelgidopteryx serripennis, Petrochelidon pyrrhonota, P. swainsoni pyrrhonota* (hybrid), *P. spilodera, Cotile cincta, C. paludicola, Hirundo euchrysea, H. daurica, H. striolata* (plate in Part i.), *H. nipalensis, H. erythropygia, Chelidon nipalensis, Tachycineta albiventris.*

1891. Sharpe, R. Bowdler. Descriptions of fourteen new Species of Birds discovered by Mr. F. J. Jackson in Eastern Africa. Ibis, 1891, pp. 117–122.

Hirundo arcticincta, sp. n. (p. 119), Mt. Elgon, Equatorial Africa.

1891. Sharpe, R. Bowdler. Catalogue of the Specimens illustrating the Osteology of Vertebrated Animals, recent and extinct, contained in the Museum of the Royal College of Surgeons of England. Part III. Aves. 8vo. London, 1891. Pp. lvii, 469.

The pterylography of the family *Hirundinidæ* is illustrated by a figure (p. 115) of the dorsal view of *H. rustica.*

1892. Reichenow, A. Bericht Allg. deutsch. orn. Gesellsch., September 1892.

Psalidoprocne chalybea, sp. n. (p. 6), Cameroons.

1892. Reichenow, A. Neue Arten. Bericht Allg. deutsch. orn. Gesellsch. xi., January 1892.

Hirundo emini, sp. n. (p. 2), Bussisi and Bukoba, Victoria Nyanza.

1892. Sharpe, R. Bowdler, and Wyatt, Claude W. *Ut suprà.* Part XV. August 1892.

Contents:—*Atticora cinerea, Hirundo tahitica, H. javanica, H. namiyei, Cotile rupestris, Tachycineta thalassinus, Hirundo arcticincta.*

1893. Sharpe, R. Bowdler, and Wyatt, Claude W. *Ut suprà.* Parts XVI., XVII. December 1893.

Cotile diluta, sp. n., Central Asia.

A mistake has occurred in the account of this species. The type specimens were sent to the British Museum by Prof. Menzbier, not by Dr. Pleske, as stated.

The following species figured:—*Chelidon urbica, Cotile riparia, Phedina brazzæ, Hirundo rustica, H. gutturalis, H. tytleri, H. erythrogastra, H. emini, Progne purpurea, P. hesperia.*

1893. Shelley, G. E. List of Birds collected by Mr. A. Whyte in Nyasaland. Ibis, 1893, pp. 1–80, pls. i.–iii.

Hirundo astigma, sp. n. (p. 19). [=*H. emini*, Reichenow, *anteà*.]

1894. Reichenow, A. Notices of the wintering of the Common Swallow in parts of Southern Europe. Orn. MB. ii. p. 76.

1894. Rothschild, W. On Albino Swallows. Nov. Zool. i. p. 667.

An interesting record of four young *H. rustica*, all albinos, being hatched at Aylesbury, Bucks, in 1891. In 1892 the same pair of birds produced one albino young one, and in 1893 "two white and three regularly coloured ones." In 1894 two white and two ordinary young birds were in the nest, so that for four successive years the pair of Swallows produced some albino nestlings.

1894. Gurney, J. H. *Hirundo gutturalis* at Brighton. Ibis, 1894, p. 452.

The bird identified as the Eastern Chimney Swallow can only be an old *H. rustica*, with the collar broken up with red spots, as is frequently the case. *H. gutturalis* has no complete collar. (*Vide* our remarks on the variation of *H. rustica, infrà*, p. 215.)

1894. Sharpe, R. Bowdler, and Wyatt, Claude W. *Ut suprà.* Parts XVIII., XIX., XX. October 1894.

Contents:—*Psalidoprocne chalybea* (no plate), *Ps. orientalis.* Titlepages, Index, &c.

NOTE ON THE

SUPPOSED HIBERNATION OF SWALLOWS.

On this subject we have said little or nothing in this work, as the study is for the curious. The best summary of what has been written on the supposed hibernation of Swallows, and their voluntary residence under water during the winter months, will be found in Professor Elliott Coues's well-known work on the 'Birds of the Colorado Valley,' and the literature on this subject is shown by him to be extensive. So positive is some of the evidence, and so certain were some writers of their statements, that there is little wonder that a great amount of conviction accompanied the early students of this apparent miracle.

"They say," writes Professor Coues, "that they have seen hundreds of Swallows, in full flight, suddenly dive under water, and disappear beneath the surface. They say that they have dug Swallows out of the mud, found them lethargic, and seen them revive and fly away. They say that they have found torpid Swallows in holes, in caves, in various odd nooks, sometimes singly, sometimes clustered like bees swarming, and have picked them up apparently dead, and have reanimated them by the warmth of the hands. They say much more to the same effect, and give full particulars.

"I have never seen anything of the sort, nor have I ever known one who has seen it; consequently I know nothing of the case but what I have read about it. But I have no means of refuting the evidence, and consequently cannot refuse to recognize its validity. Nor have I aught to urge against it, beyond the degree of incredibility that attaches to highly exceptional and improbable allegations in general, and in particular the difficulty of understanding the alleged abruptness of the transition from activity to torpor."

Professor Coues very aptly draws attention to the fact that this story of the hibernation of Swallows is a very ancient one, and existed for centuries before anything

was known about the migration of the birds; consequently it was necessary to find some explanation of their disappearance during the winter months. We will add, however, that we shall require further evidence of the hibernation of Swallows on the next occasion that a torpid specimen is produced from the mud or such-like place in winter. We shall want to see the moulted feathers of the bird in its place of retreat; for this little fact seems to have been unknown to the believers in the phenomenon, *that the Swallows moult during the winter months.* Very few birds, we fancy, could support immersion in water, torpidity, and a complete moult of body-feathers, quills, and tail-feathers at the same time; and, for our own part, we do not believe in the hibernation of Swallows (we say nothing about "Swifts," which are "Swallows" still to the uninstructed), but prefer to think of them as wintering in a warmer climate than England, where insect food is procurable, and where they have a chance of surviving the trying process of their moult. It is, however, tolerably certain that some species of Swifts, and even Purple Martins, do hibernate; and it is but fair to reproduce a letter which was sent by Count Salvadori to 'Nature' as late as 1889, and is published in that journal (vol. xl. p. 223):—

"Prof. Carlo Spegazzini, an Italian botanist, and quite a trustworthy observer, living at La Plata, the new town in the Argentine Republic, writes from there the following account to my friend the Marquis Giacomo Doria, of Genoa:—

"'The bird known here by the name of *Golondrina*, and which I think is *Progne domestica*, is subject to hibernation. Last year, while the zinc roof of a small house was being taken up in the month of August, just in the middle of our winter, I found underneath about a hundred Martins, all accumulated one over the other and lethargic, but in good health, so that, exposed to the sun, they awoke and flew away very briskly. This year again, having seen some holes on a *barranca*, a steep bank over the Plata, I began to dig at them, hoping to find some Bats; but there I found several hundreds of the Martins of the same kind as above mentioned, clustered and in a state of lethargy. Is such a thing known to naturalists?'"

FAMILY HIRUNDINIDÆ.

Family HIRUNDINIDÆ.

Clavis subfamiliarum.

A. Mas remige primâ minimè serratâ . . . . . HIRUNDININÆ.
B. Mas remige primâ valdè serratâ . . . . . PSALIDOPROCNINÆ

Subfam. I. *HIRUNDININÆ.*

Clavis generum Hirundininarum.

a. Digiti plumosi . . . . . 1. Chelidon.
b. Digiti nudi.
  a'. Nares longitudinales vel ovales, operculo obtectæ.
    a''. Cauda furcata vel quadrata, rectrice extimâ minimè extensâ, pogonio interno haud emarginato.
      a'''. Nares lateraliter positæ, operculo longitudinali obtectæ.
        a^1. Hallux debilis, digitum quartum unguemque haud æquans.
          a^3. Tarsi postici fasciculâ plumosâ ad finem instructi : cauda minimè albo maculata . . . . . 2. Cotile.
          b^3. Tarsi postici fasciculâ plumosâ ad finem absente : cauda albo maculata . . . . . 3. Biblis.
        b^1. Hallux fortis, robusta, digitum quartum unguemque valdè excedens . . . . . 4. Tachycineta
      b'''. Nares ovales, apertæ, operculo minimè obtectæ . . . . . 5. Phedina.
    b''. Cauda valdè furcata, rectrice extimâ conspicuè elongatâ, pogonio interno leviter emarginato.
      c'''. Nares lateraliter positæ, operculo obvio . . . . . 6. Hirundo.
      d'''. Nares ovales, apertæ, operculo vix ullo . . . . . 7. Cheramœca.
  b'. Nares rotundatæ, apertæ, operculo nullo.
    c''. Cauda valdè furcata : notæi color uniformis : uropygium dorso concolor.
      e'''. Digitus secundus et medius ad basin conjuncti, maxillæ tomio sinuato . . . . . 8. Progne.
      f'''. Digitus secundus et medius ad basin conjuncti, maxillæ tomio ferè recto . . . . . 9. Atticora.
    d''. Cauda quadrata vel paullò emarginata : uropygium dorso concolor. 10. Petrochelidon

Genus I. CHELIDON *.

	Type.
Hirundo, pt., Linn. Syst. Nat. i. p. 343 (1766).	
Hirundo, Forster, Syn. Cat. Brit. B. p. 55 (1817)	*C. urbica.*
Chelidon, Boie, Isis, 1822, p. 550	*C. urbica.*
Delichon, Moore, P. Z. S. 1854, p. 104	*C. nipalensis.*
Chelidonaria, Reichenow, J. f. O. 1889, p. 187	*C. urbica.*

Distinguished from all the other *Hirundinidæ* by the feathered toes.

Range. Over the greater part of the northern Old World. Throughout the Palæarctic Region, wintering in the Indian and Ethiopian Regions.

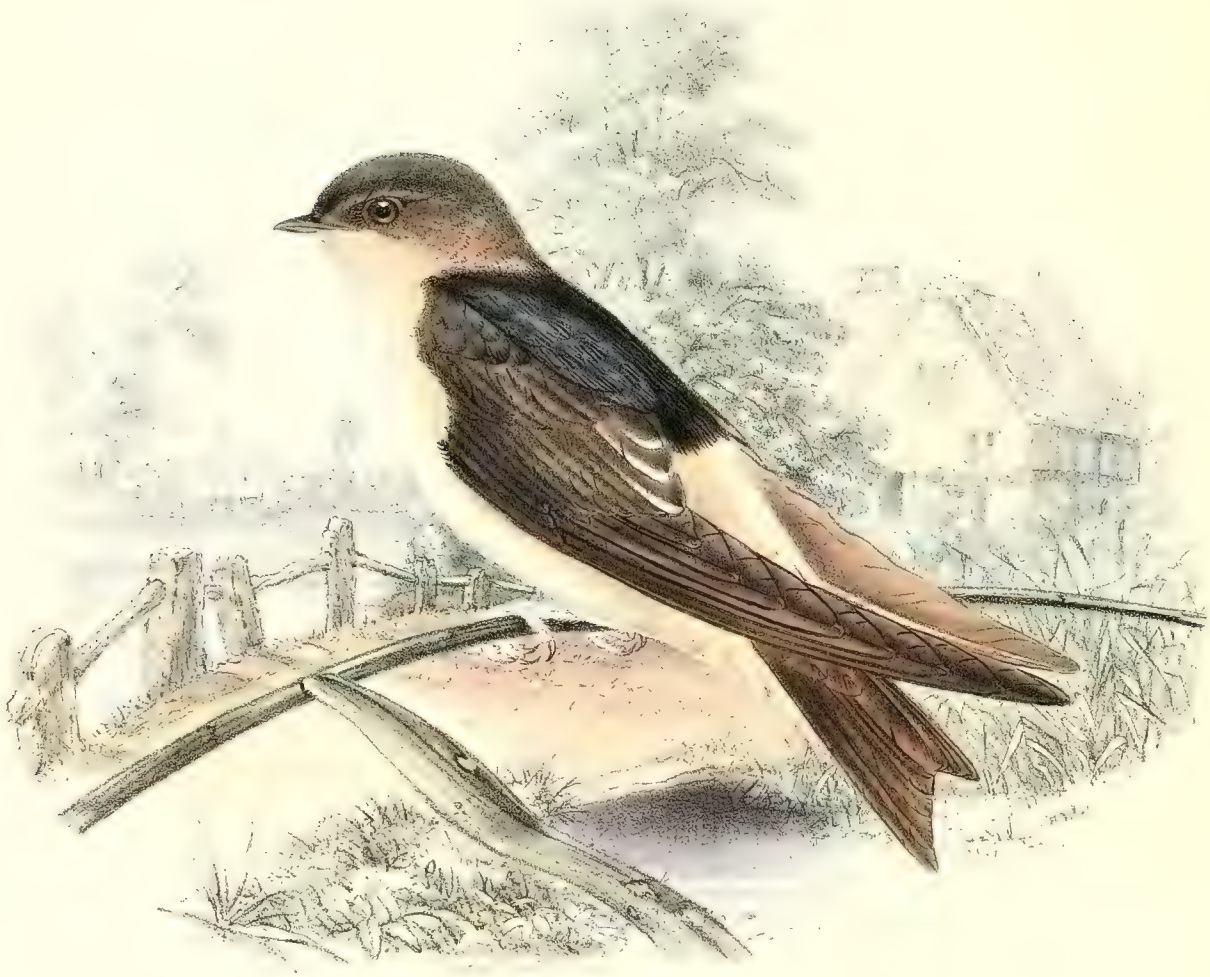
Clavis specierum.

a. Subcaudales albæ.
  a'. Rectrix extima minimè albo notata.
    a''. Supracaudales longiores nigræ, reliquæ albæ, uropygio concolores.
      a'''. Mentum album, gastræo reliquo concolor.
        a[1]. Major: alâ 4·25–4·3 poll.: subtùs purè alba (ad.), gutture fumoso vel isabellino (juv.): cauda valdè furcata . . . . . 1. *urbica*, p. 5.

* Dr. Leonard Stejneger, in the 'Proceedings of the U.S. National Museum' (vol. v. p. 31), has drawn attention to the fact that previously to Boie having selected the *Hirundo urbica* of Linnæus as the type of his genus *Chelidon*, Thomas Forster had already restricted the same species to *Hirundo*, and had proposed the name *Chelidon* for the Common Swallow and its allies. Thus *Hirundo* ought to be kept for the Martins, and *Chelidon* used for the Swallows, reversing the established custom of ornithologists for three quarters of a century. This conclusion of Dr. Stejneger has been adopted by the Committee of the American Ornithologists' Union, and *Chelidon* is now in general use for the Barn-Swallows of the New World. In the 'Catalogue of Birds' (vol. x. p. 85) we did not follow Dr. Stejneger's conclusions, as we did not agree that Forster's nominal list of British birds, which gave not a single character or description, ought to supersede the more useful and intelligible work of Boie. A still more potent reason for not adopting such a wholesale change in nomenclature seemed to be that ornithologists in every country had become accustomed to the names of *Hirundo* for the Swallows, and *Chelidon* for the Martins, and it was a pity to reverse them. The same reasoning has induced us to observe the old-fashioned nomenclature in the present 'Monograph.' Moreover in 1889 Dr. Reichenow pointed out that *Hirundo rustica* had already been fixed as the type of *Hirundo* by Schaeffer in his 'Elementa Ornithologica, Genus 100,' and that, in any case, Forster's genus *Chelidon* must be a synonym of *Hirundo*, Schaeffer. Dr. Reichenow therefore proposed the name *Chelidonaria* for the House-Martins, and by those who make up their mind to depart from the old-fashioned nomenclature the name *Chelidonaria* may be employed for the following species:—1. *Chelidonaria urbica*; 2. *C. cashmiriensis*; 3. *C. dasypus*; 4. *C. lagopus*; 5. *C. albigena*; 6. *C. nipalensis*.

*b*⁴. Minor: alâ 4 poll.: subtùs alba, dilutè fumoso-brunneo lavata: cauda minùs furcata	2. *cashmiriensis*, p. 19.
b‴. Mentum et genæ ad basin nigræ: subtùs alba, fumoso-brunneo lavata: cauda minùs furcata	3. *dasypus*, p. 23.
b″. Supracaudales longiores albæ, reliquæ concolores: mentum minimè nigro maculatum: cauda paullò furcata	4. *lagopus*, p. 25.
b′. Rectrix extima intus albo notata	5. *albigena*, p. 29.
b. Subcaudales nigræ	6. *nipalensis*, p. 31.

No species of House-Martin is found in the New World, nor does any species, so far as we know, occur within the limits of the Australian Region. In the Palæarctic Region the House-Martins are universally distributed, breeding in the Eurasian Sub-Region even beyond the Arctic Circle. *C. urbica* is the western species and is replaced in the Central Siberian province and thence eastwards by *C. lagopus*, whilst still further to the eastwards *C. dasypus* takes its place in the Japanese Islands. Our information as to the House-Martins in Central Asia and their distribution seems to us to be still imperfect, but even the winter-ranges of *C. urbica* and *C. lagopus* appear to preserve the eastern and western character of their breeding-habitats. In the case of the Common Martin, as has been noted with many other Swallows, there is a tendency to found breeding-colonies in outlying districts, as, for instance, in the Nilghiris. Of *C. albigena* we still know so little that we cannot speculate upon its distribution. *C. cashmiriensis* is a southern form of *C. urbica* and is characteristic of the mountainous fauna included in the Himalo-Chinese Sub-Region; while *C. nipalensis*, the most aberrant member of the genus *Chelidon*, is strictly an inhabitant of the northern Himalo-Malayan Sub-Region.



C.W.W. del

CHELIDON URBICA
(young.)

Mintern Bros. imp.



C.W.W. del.

Mintern Bro's. imp

CHELIDON URBICA

CHELIDON URBICA (*L.*).

HOUSE-MARTIN.

La petite Hirondelle ou le Martinet à cul blanc, Briss. Orn. ii. p. 490 (1760).

Hirundo urbica, Linn. Syst. Nat. i. p. 344 (1766); Temm. Man. d'Orn. i. p. 428 (1815); Forster, Syn. Cat. Brit. B. p. 55 (1817); Naum. Vög. Deutschl. vi. p. 75, Taf. 145 (1823); Roux, Orn. Provenç. pl. 144 (1825); Werner, Atlas, Chelidones, pls. 2, 3 (1827); Ménétr. Cat. rais. Cauc. p. 45 (1832); Selby, Brit. B. p. 123, pl. xlii. fig. 2 (1833); Gould, B. Eur. ii. pl. 57 (1838); Schl. & Susem. Vög. Eur. Taf. vi. I. fig. 1 (1839); Macgill. Brit. B. iii. p. 573 (1840); Nordm. in Démid. Voy. Russ. Mérid. iii. p. 200 (1840); Hewits. Eggs Brit. B. i. p. 216, pl. lvii. fig. 3 (1846); Thomps. B. Ireland, i. p. 389 (1849); Blyth, Cat. B. Mus. As. Soc. p. 198 (1849, pt.); Kjærb. Orn. Dan. pl. xiv. fig. 5 (1852); Schl. Vog. Nederl. pl. 58 (1854); Sundev. Sv. Fogl. pl. xvii. fig. 6 (1856–72); Linderm. Vög. Griechenl. p. 117 (1860); Schl. Dier. Nederl. Vogels, pl. 6. figs. 5, 5 *a* (1861); Keulem. N. T. D. iii. p. 384 (1866); Borggr. Vogelf. Norddeutschl. p. 100 (1869); R. Gray, B. W. Scotl. p. 207 (1871); Harting, Handb. Brit. B. p. 35 (1872); Godman, Ibis, 1872, p. 171; Keulem. Onze Vogels, ii. pl. 19 (1873); Saxby, B. Shetl. p. 146 (1874); Harting, Summer Migr. p. 184 (1875); Fallon, Ois. Belg. p. 124 (1875); Seebohm, Ibis, 1882, pp. 210, 374; id. Brit. B. iii. p. 178, pl. 17 (1883); Dixon, Ibis, 1882, p. 561; Homeyer & Tancré, Mitth. orn. Ver. Wien, May 1883, p. 83; Gadeau de Kerville, Faun. Norm. p. 201 (1890); Olphe-Galliard, Faun. Eur. Occ. fasc. xxii. pp. 67, 761; Reiser, Vogels. Landesm. Sarajevo, p. 23 (1891); Gätke, Vogelw. Helgol. p. 438 (1891).

Le petit Martinet, Daubent. Pl. Enl. vii. pl. 542.

L'Hirondelle au croupion blanc ou L'Hirondelle de Fenêtre, Montb. Hist. Nat. Ois. vi. p. 614, pl. xxv. fig. 2 (1779).

Martin, Lath. Gen. Syn. ii. pt. 2, p. 564 (1783).

Hirundo domestica, Leach, Syst. Cat. Mamm. etc. Brit. Mus. p. 19 (1816).

Chelidon urbica, Boie, Isis, 1822, p. 550; Rüpp. Neue Wirb. p. 106 (1835); Keys. & Blas. Wirb. Eur. p. lxi (1840); Rüpp. Syst. Uebers. p. 22 (1845); Gray, Gen. B. i. p. 60 (1845); id. Cat. Fissir. Brit. Mus. p. 31 (1848); Bp. Consp. i. p. 343 (1850); Cab. Mus. Hein. Th. i. p. 51 (1850); Bolle, J. f. O. 1854, p. 460; Heugl. Syst. Uebers. p. 17 (1856); Jaub. et Barth.-Lapomm. Rich. Orn. p. 340 (1859); Salvin, Ibis, 1859, p. 302; Tristr. t. c. p. 434; Heugl. J. f. O. 1861, p. 419; Gould, B. Gt. Br. vol. ii. pl. 6 (1862–73); Jerd. B. Ind. i. p. 166 (1862); Newton in Baring-Gould's Iceland, p. 408 (1863); Brehm, Reis. Habesch, p. 272 (1863);

Filippi, Viagg. Pers. p. 346 (1865); Bettoni, Ucc. nidif. Lomb. tav. 67 (1865–70); More, Ibis, 1865, p. 139; Baird, Ibis, 1867, p. 281; Degl. & Gerbe, Orn. Eur. i. p. 592 (1867); Loche, Expl. Sci. Algér., Ois. ii. p. 71 (1867); Tristr. Ibis, 1867, p. 364; Drake, t. c. p. 425; Saunders, Ibis, 1869, p. 174; Heugl. Orn. N.O.-Afr. i. p. 168 (1869); Doderl. Avif. Sicil. p. 145 (1869); Droste, Vogelw. Bork. p. 87 (1869); Wyatt, Ibis, 1870, p. 12; Elwes & Buckl. t. c. p. 200; Blanf. Geol. & Zool. Abyss. p. 349 (1870); Sharpe, P. Z. S. 1870, p. 202; Fritsch, Vög. Eur. tab. 23. fig. 5 (c. 1870); Salvad. Faun. Ital. Ucc. p. 51 (1871); Shelley, B. Egypt, p. 125 (1872); Alst. & Harvie-Brown, Ibis, 1873, p. 59; Brooke, t. c. p. 237; Hume, Str. F. 1873, p. 323; Brooks, Str. F. 1875, p. 231; Dresser, B. Eur. iii. p. 495, pl. 162 (1875); Irby, B. Gibr. p. 102 (1875); Wharton, Ibis, 1876, p. 19; Walden, t. c. p. 356; Blanf. East. Pers. ii. p. 216 (1876); Tacz. Bull. Soc. Zool. France, ii. p. 138 (1877); Hume, Str. F. viii. p. 84 (1879); Bogdanoff, B. Caucas. p. 116 (1879); Newt. ed. Yarr. Brit. B. ii. p. 349 (1880); Butler, Cat. B. S. Bombay Pres. p. 15 (1880); Collett, Norges Fugle, p. 286 (1881); Scully, Ibis, 1881, p. 428; Shelley, Ibis, 1882, p. 259; Biddulph, t. c. p. 269; Stejn. Pr. U.S. Nat. Mus. v. p. 32 (1882); Severtz. Ibis, 1883, p. 70; B. O. U. List Brit. B. p. 44 (1883); De Rochebr. Faun. Sénég., Ois. p. 216 (1884); Tristr. Faun. & Flor. Palest. p. 62 (1884); Radde, Orn. Cauc. p. 36 (1884); Sharpe, ed. Layard's B. S. Afr. p. 839 (1884); Eagle Clarke, Ibis, 1884, p. 142; Saunders, t. c. p. 374; Zarudn. Ois. Transcasp. p. 32 (1885); Whitehead, Ibis, 1885, p. 27; Chapman, Ibis, 1885, p. 175; Sharpe, Cat. B. Brit. Mus. x. p. 87 (1885); Giglioli, Avif. Ital. p. 186 (1886); Pleske, Uebers. Säug. und Vög. Kola-Halbins. p. 92 (1886); Lilford, Col. Fig. Br. B. pt. iii. (1886); Tait, Ibis, 1887, p. 191; Macpherson, t. c. p. 470; Salvad. Elench. Ucc. Ital. p. 81 (1887); Radde, Ornis, iii. p. 490 (1887); Guillemard, Ibis, 1888, p. 120; Lilford, t. c. p. 329; Reid, t. c. p. 433; Koenig, J. f. O. 1888, p. 166; Tristram, Cat. Coll. p. 203 (1889); Eagle Clarke, Ibis, 1889, p. 542; Saunders, Man. Brit. B. p. 157 (1889); Giglioli, Prim. Resoc. p. 313 (1889); id. op. cit. pt. ii. p. 187 (1890); Oates, Faun. Brit. Ind., Birds, ii. p. 269 (1890); id. ed. Hume's Nests & Eggs Ind. B. ii. p. 177 (1890); Brusina, Motr. etc. [Orn. Croat.] p. 58 (1890); id. Orn. Jahrb. ii. p. 17 (1891); Graham, Birds of Iona & Mull, pp. 180–182, 228 (1891); Buckley & Harvie-Brown, Vertebr. Faun. Orkney Isl. p. 112 (1891); Frivaldsky, Av. Hung. p. 71 (1891); Evans, Ibis, 1891, p. 61; Sharpe, Sci. Res. Second Yark. Miss., Aves, p. 105 (1891); Seeb. Ibis, 1892, p. 19; Meade-Waldo, Ibis, 1893, p. 192.

Chelidon fenestrarum, C. L. Brehm, Vög. Deutschl. p. 140 (1831).

Chelidon rupestris, C. L. Brehm, t. c. p. 140 (1831).

Hirundo candida,
Hirundo varia,
Hirundo pallida,
} Brehm, Vög. Deutschl. vi. p. 77 (1833).

The Martin, Yarr. Brit. B. ii. p. 222 (1843).

Chelidon tectorum, C. L. Brehm, Naum. 1855, p. 271.

Chelidon urbica vulgaris,
Chelidon urbica latirostris,
Chelidon urbica fenestrarum,
Chelidon urbica tectorum,
Chelidon urbica rupestris,
Chelidon urbica septentrionalis,
A. E. Brehm, Verz. Samml. C. L. Brehm, p. 3 (1866, *teste* Dresser).

Chelidon cashmiriensis (nec Gould), Gigl. Avif. Ital. p. 187 (1886); id. & Manzella, Icon. Avif. Ital. fasc. xliii. (1888); Gigl. Avif. Ital. i. Resoc. p. 316 (1889).

Chelidonaria urbica, Reichen. J. f. O. 1889, p. 187; id. Syst. Uebers. Vög. Deutschl. p. 25 (1889); Hartert, Kat. Vogelsamml. Senckenb. Mus. p. 98 (1891).

C. subcaudalibus albis: rectricibus immaculatis: supracaudalibus longioribus nigris, reliquis albis: mento albo, gastræo concolore, nec fumoso: caudâ valdè furcatâ.

Hab. in regione Palæarcticâ occidentali, usque ad Asiam centralem, in Africâ et in peninsulâ Indicâ hibernans.

Adult male in breeding-plumage. General colour above deep purplish blue, with slight indications of the white bases of the feathers showing on the hind neck and mantle; wing-coverts blackish, the lesser series slightly glossed with purple, the median and greater coverts with a very faint steely gloss; bastard-wing, primary-coverts, and quills also blackish, slightly glossed with steely green; lower back and rump pure white, sometimes with narrow shaft-lines of dusky; upper tail-coverts blue like the back; tail-feathers blackish brown, with a slight steel-blue gloss on the centre ones; crown of head like the back; lores and feathers round the eye black, as well as the ear-coverts; cheeks and lower ear-coverts as well as the entire under surface of the body pure white; sides of body and flanks washed with very pale smoky brown; thighs white; under tail-coverts white, sometimes with a slight wash of dingy brown, the shaft-stripes dusky and tolerably distinct, these streaks, however, often absent; under wing-coverts and axillaries smoky brown, the outer wing-coverts mottled with dusky bases to the feathers; quills dusky brown below, a little paler on the inner edge: bill black; feet black; iris dark brown. Total length 5·5 inches, culmen 0·35, wing 4·52, tail 2·5, tarsus 0·45.

Adult female. Similar to the male in colour. Total length 5 inches, culmen 0·35, wing 4·3, tail 2·5, tarsus 0·45.

Young. Distinguished from the adults at a glance by the yellow gape and white fringes to the ends of the secondaries. The colour of the upper surface is much duller, being often of a dingy brown with a gloss of purplish or greenish steel-blue; the throat is pale smoky brown, well defined on the fore neck, and contrasting with the rest of the under surface, which is pure white. Before leaving England, the plumage becomes worn and dingy brown, but the new feathers are visible in examples killed late in October.

Sometimes the young have a pretty tinge of rufous isabelline on the throat and fore neck, and this same colour is often visible on the adults in breeding-plumage, pervading also the rump.

Hab. The whole of the western Palæarctic Region, extending into Central Asia and into the Indian Peninsula. Wintering in the latter locality and in Africa.

The House-Martin is easily recognized from the other species of the genus *Chelidon* by its strongly forked tail. The only other species which has no black spot upon the chin, but has the long upper tail-coverts black, is *C. cashmiriensis*. The latter species, however, may be distinguished by its smaller size, less forked tail, and by the smoky-brown tinge which pervades the white under surface. As a general rule the above-named characters are sufficient to distinguish the two species, but it must be confessed that the smoky-brown tint of the under surface in *C. cashmiriensis* is often to be found in examples of *C. urbica*. One specimen of a young bird, shot near Hove in Sussex, on the 14th of October, would certainly be ascribed to *C. cashmiriensis* but for its deeply forked tail, which shows that it is *C. urbica*.

As far as the British Islands are concerned, the Martin appears everywhere to be a summer visitant, being as common in Ireland as it is in England, and nesting as far north as Shetland and the Orkney Islands. It occurs also in all the islands of the Inner Hebrides, and, until lately, was supposed to be absent in the Outer Hebrides, but in 1887 the Rev. H. A. Macpherson recorded a specimen from St. Kilda, and Messrs. Harvie-Brown and Buckley give North Ronay as an additional locality.

An excellent account of the distribution of the Martin in Northern Europe is given in Mr. Dresser's 'Birds of Europe,' to which there seems little to be added. In the Faroes, according to Mr. Benzon's note, the Martin not unfrequently appears in spring, but does not breed. In Iceland its occurrences are very rare, and no instances of its breeding in the island are on record, though Faber states that in 1839 a few pairs began to nest in Husevig in Northern Iceland, but very soon left the locality.

In Scandinavia the species is generally distributed over the central and southern districts, but becomes rarer than the Swallow in the extreme north. Mr. Collett's note is as follows:—"It breeds in colonies throughout the eastern parts of Norway, but is less numerous on the west coast, though not uncommon, and nests commonly in some places, as, for instance, at Bergen. On the fells it breeds in and above the birch-region, in colonies in the rocks on the Fillefjeld, Hugakollen in Valders, the Kvamenaaset in Öie, the Blaahöerne, and other places in the Dovre range." Mr. Dresser states that Pastor Sommerfelt found it breeding here and there in East Finmark as far north as Vardö, and, according to Wolley, a colony bred in a cliff near the Bögfjord in South Varanger. It is common throughout Sweden, and visits Lapland, where Mr. A. C. Chapman found them arriving and commencing to breed on the 4th of June. Mr. Dresser noticed it everywhere in the parts of Finland that he visited, but von Wright says that it only goes as far north as Aavasaksa, a little above Torneå.

Dr. Pleske, in his work on the Mammals and Birds of the Kola Peninsula, gives

the date of its arrival in Sadankydä as the 18th of May, in Karesuando as the 17th to the 30th of May, in Utsjoki as the 1st and 4th of June, in Enare as the 13th of May, and in Muonio as the 14th of June. It is recorded as the commonest breeding bird in the Kandalakscha district.

In Russia it is said to be generally distributed, and was found by Mr. Meves at Archangel. Messrs. Alston and Harvie-Brown state that they noticed House-Martins at St. Petersburg, Wuitegra, and Archangel, in which latter place they nested among the stone carvings of the Imperial Barracks. Mr. Seebohm and Mr. Harvie-Brown did not meet with it on the Petchora, but Mr. Sabanaeff states that it is found in the Ural Mountains, as high as 60°. Taczanowsky records the Martin as a summer visitant to Poland, but states that it has become much less plentiful during the last twenty years.

Throughout all the other countries of Europe the Martin seems to nest, arriving and commencing to build in the south much earlier than it does in the north. Thus Mr. Benzon considers that it is at least five days later in its arrival in Denmark than it is in England; while still further to the south, Mr. Howard Saunders found the birds busy building their nests at Seville on the 19th of February. Mr. Tait says that in Portugal the average date for the arrival of the species at Coimbra is the 19th of February, and that for departure the 7th of October; these dates are given by Senhor Carvalho as the result of twenty-three years' experience. Mr. Tait says that in 1887 he noticed a Martin at Abrantes, on the Tagus, on the 2nd of February.

Colonel Irby gives the 5th of February as the earliest date of arrival noticed by him at Gibraltar; and the species is found all over Spain, except in the Basque Provinces, where, according to Mr. Howard Saunders, it is almost unknown, though it is plentiful a little further to the east.

The Martin is also common in Italy in March and April, returning in September and October. Count Salvadori considers it unlikely that the species breeds in Italy, certainly not in the southern part, while Benoit's statement that it winters there is also stated to be erroneous.

Doderlein mentions that the species winters in Sicily, but there is no record of its wintering in Corsica or Sardinia, where, however, the species breeds abundantly.

Mr. Godman's note upon the species in the Canary Islands is as follows:—"This species is not recorded as a resident by other observers, and perhaps is only accidental; but as I saw a pair that had a nest at St. Anna in Madeira, I include it. I did not meet with it in the Canaries or elsewhere. Bolle says he saw swarms of them at Oliva, in Fuerteventura, in April 1852. He remarks that they disappeared as quickly as they came." Mr. Meade-Waldo, however, met with the Martin in the Canaries in thousands, and he considers it to be now a regular spring and autumn migrant.

In Algeria it nests in the towns and villages, according to Loche. Mr. Dixon says that he met with Martins everywhere from the coast to Biskra. Mr. Salvin noticed several at Souza, and again at Tunis. Dr. Koenig has seen the species in the latter

country in January, and Canon Tristram says that a few pairs may be seen throughout the winter in Algeria.

Lord Lilford writes :—"I observed but few of this species in Cyprus, but Guillemard found it breeding in great numbers on the walls of the monastery of Kikko towards the end of May 1887, and states that a few of these birds remain in Cyprus throughout the winter."

In Palestine, according to Canon Tristram, the Martin "arrives in great numbers about the 5th of April, and having no windows to be utilized, builds on the faces of cliffs in all the valleys and ravines."

Mr. Wyatt says :—"I met with a few of these birds in Wády Wisset, in the Sinaitic Peninsula, on March 16th ; it was the only place where I saw them, with the exception of a single bird I shot in Wády Feirán."

Both Lindermayer and Mühle record the Martin as a common visitor to Greece in summer ; and the same may be said of Turkey, according to Messrs. Elwes and Buckley. Professor Brusina says that it is very rare in Agram, but plentiful in Cattaro, and he also found the species at Cettinje and Rijeka along with *Hirundo rustica*. In Southern Russia, according to Von Nordmann, it is everywhere abundant, nesting not only in the villages, but in isolated houses, such as posting-stations, and it is even found breeding on the stone or wooden bridges which are found in the middle of the steppe. In Astrachan, according to the observations of Mr. Henke, the Martin is not so common as *Cotile riparia*, and is not seen on the steppes. In the Caucasus, Dr. Radde says, the species is somewhat local, occurring in colonies, and not frequenting the low-lying and hot portions of the country. In many places it is more common than *Hirundo rustica*, and it is met with breeding up to 9000 feet. In Southern Dagestan, Dr. Radde found it rarer than the Chimney-Swallow.

There seems to have been some hesitation in the minds of several ornithologists as to the eastern range of the House-Martin, and neither Mr. Dresser nor Mr. Seebohm fully recognize the fact of its occurrence in India, where it has often, no doubt, been confused with *C. cashmiriensis*.

Mr. Blanford procured a specimen at Karman, near Shiraz, and gives the following note in his 'Birds of Eastern Persia' :—"Not rare on the Persian highlands about towns and villages, though it is scarcely so common as it is in many parts of Europe. The Persians encourage the House-Martin to build in houses by hanging up little stands for them to settle upon, their presence in a house being considered lucky. I usually found their nests in villages at a considerable elevation, 6000 or 7000 feet, but the birds breed in Shiraz and other towns below 5000 feet. They are, of course, only summer visitors on the Persian highlands."

Mr. Zarudnoi met with it commonly on the mountains during his journey to Transcaspia. At Akal-Téké it was rarer, nesting in the ruins of the fortresses. In August bands of Martins came from the north on migration.

Dr. Severtzoff does not record the House-Martin from Turkestan, but includes

C. dasypus as an inhabitant of that country; he states, however, that Martins, which he determined to be *C. urbica*, were observed migrating in small parties through the Pamir in the latter part of August. In the British Museum are three specimens, received in exchange from the St. Petersburg Museum, which bear the following labels:—"Tchimkent, May 3; R. Kurkuran, Aug. 18; and Uljauntai, N.W. Mongolia, May 11." Dr. Pleske kindly informs us that Tchimkent is a small fortress, not far from Tashkend, while Uljauntai is in Mongolia, between Kobdo and Urga, on a well-known caravan-route. The species has likewise been recorded by Messrs. Homeyer and Tancré from the Altai Mountains, though it might have been expected that *C. dasypus* would have replaced *C. urbica* in this locality.

During the Second Expedition to Yarkand in 1873–74, specimens were shot at Saspul and Snurla on the Indus at the latter end of August, at Leh on the 30th of the same month, and again at Sanju on the 29th of October; besides these specimens obtained by Dr. Stoliczka, Colonel Biddulph also secured a specimen at Kargil in Ladak; the latter gentleman likewise states that it was observed by him in Gilgit in July, and Dr. Scully also says that it is a summer visitor to Gilgit, where it is very common in May and June. Mr. W. E. Brooks states that he saw flocks of this species at Masuri at the end of April, and obtained three specimens, now in the Hume Collection. When he returned in June they were all gone.

Mr. Hume received some specimens from Thundiani in Huzara, a little sanitarium nearly 9000 feet above the level of the sea, where the birds are plentiful during the summer. Other specimens of the Common Martin are in the Hume Collection from Kandeish, killed in November, and from Shemogah in Mysore, obtained in April. Jerdon recorded the Martin from the Nilghiris in March, but said nothing as to its breeding in this locality, though Mr. Hume has received from Coimbatore some young specimens from Mr. R. P. Carter. These were obtained in January, and were doubtless bred in the neighbourhood, as the following note shows that the Martin actually breeds in Southern India. In Mr. Oates's edition of Mr. Hume's 'Nests and Eggs of Indian Birds' we read:—

"Major M. F. Coussmaker writes from Bangalore regarding this Martin:—'I took the nest of this bird on May 1, in the Shemogah Districts, Mysore. The spot selected by this colony was a large overhanging rock in the bed of the River Tunga, about three miles from Shemogah; they appear to have bred in the same place for many years, as the under surface of the rock was covered with old nests. The nests I got were so broken that I could take no reliable measurements. The eggs were mostly hard-set, and the number varied from two to four in each nest. They were pinky white before being blown, and measured ·7×·5 inch. I believe that this species has not been found breeding in India before. Had I known this at the time I would have made greater exertions to get a perfect nest, but the rock is very difficult to get at owing to its shape and position.'"

In Africa the House-Martin is only known as a winter visitor, migrating by the

Nile Valley to the interior of South-eastern Africa. Captain Shelley observed the species in Egypt and Nubia in April and May, when it was apparently making its way northward, and he found no evidence of its breeding in those countries. Von Heuglin records it as a bird of passage only in N.E. Africa and Arabia, going north in February and March, and returning southward from August to the beginning of October, passing either singly or in large flocks, sometimes in company with other Swallows. A specimen was obtained by Mr. Blanford at Koomayli on the 2nd of February.

We cannot find any evidence of the capture of the species in Eastern Africa, and yet it appears to pass south by the East Coast route, for it was discovered by the late Mr. J. S. Jameson during his expedition to Mashona Land. It was met with on the Quae-quae River on October 23rd; and Mr. Ayres says that "for two or three days, from about 9 to 10 A.M., considerable numbers of Martins were flying up the river in a south-easterly direction at a great height, only now and then one coming within range; they were apparently migrating."

We have never seen a Senegambian specimen, but M. de Rochebrune says it is common there in winter, and gives a number of places where it has been observed. He states that it arrives there in October. Mr. Keulemans, who accompanied Dr. Dohrn on his expedition to West Africa, states that he shot a single specimen on Prince's Island, and he entertains no doubt as to the correctness of the identification. The specimen was too much injured to be preserved, and this is the only certified occurrence of the species in that part of West Africa.

The House-Martin is a very familiar summer visitant to the British Islands, and it is quite a feature in the suburbs of London and other large cities. It arrives a few days later than the Common Swallow, towards the middle or end of April, leaving again in September and October. It often rears two, or even three, broods, and some of the later hatched birds are found with us in October, and several young specimens captured in that month are in the British Museum. The latest date on which Martins have been seen by the authors in this country was the 22nd of November, when Sharpe saw a flock of about a dozen individuals passing over the park at Avington, in Hampshire. These birds were wending south in the late evening, but as they circled at a great height above the house for a few moments, several shots were fired at them by Captain Shelley and some others of the party, who had just returned from shooting, but the birds were out of range and not one specimen could be procured. Of the identity of the species, however, there was not the smallest doubt. Mr. Seebohm even records the occasional occurrence as late as December, and Mr. Howard Saunders possesses a specimen shot at Reigate in the same month. In Scotland and the north of England the Martins leave somewhat earlier than in the south, and mostly disappear in September, whereas in the latter part of the country they depart early in October. Their autumn flight is heralded by large numbers of the birds assembling together with Swallows and Sand-Martins on the telegraph-wires, and often in the early autumnal mornings many hundreds of Swallows and Martins congregate on the slated roofs of houses which the sun has begun to warm; here they sit,

busily preening their feathers, keeping up a constant twittering and bathing in the rain-water of the leaden gutters if there should chance to be any water in them: such assemblages as the above take place annually at Holly Lodge, at Cookham, and generally last for about a fortnight, until, as if by common consent, the birds suddenly disappear and are not seen until the following spring.

The nest of the Martin is usually placed under the overhanging eaves of houses, but in many parts of Europe it is still a frequenter of rocks, as is shown by the following interesting note in Mr. Henry Seebohm's 'History of British Birds.' He writes:—"There can be little doubt that the Martin pairs for life, and every season returns to its old nest and uses it again. This interesting fact has been proved by marking birds in various ways, and in some instances they have been found in their old haunts the following year. There can be little doubt that the bird formerly used to breed exclusively on rocks, and that its habit of frequenting buildings is comparatively only a recent one. Thousands of Martins breed on the limestone rocks in Dovedale and in other parts of the Peak of Derbyshire, at Malm Cove near Settle in Yorkshire, and in many other places, especially on the cliffs of the sea-coast at Flamborough and other places in England and Scotland. It frequents alike the wildest portions of the country and the highly cultivated districts, and very often breeds in considerable numbers even in our largest towns. There is a curious nesting-place of this species in the Peak. The stone railway-bridge that spans Monsal Dale is lined with Martins' nests, and the birds seem to be not at all inconvenienced by the passing trains. The nests are built outside the bridge, under the coping which projects over the walls.

"In the Parnassus they breed both on rocks and on houses. At Castri (the ancient Delphi) the nests of this bird are common under the eaves of the houses in the village; and there is a large colony occupying the cliffs, in company with the Rock-Sparrow (*Passer petronia*), in the picturesque gorge from which the famous spring flows. I have also seen other large colonies in the mountain-limestone cliffs at Agoriane and Belitza; but by far the largest colony I have ever seen is in a romantic glen in the mountains overlooking Missolonghi. The rocks overhang very much, and when I was there hundreds of nests were to be seen under the overhanging part, whilst outside and in the valley the birds were flying in thousands, like a swarm of bees. In a cleft of the rock, in the midst of the Martins' nests, was a huge nest of the White-tailed Eagle, and many of the Martins' nests were in the possession of the Common House-Sparrow."

Colonel Irby also remarks that the Martins build on rocks near Gibraltar, like *Biblis rupestris*. Mr. W. Eagle Clarke, too, found them breeding on the faces of the great cliffs on the mountain-sides at Andorra in the Eastern Pyrenees, at Canillo on a cliff at 5300 feet. Again, in Palestine, Canon Tristram says that the species "reappears in small numbers about the 8th of April, and breeds in colonies on the sheltered cliffs in the valleys of Northern Galilee."

Another method of incubation is that mentioned by M. Gadeau de Kerville, who says that in Normandy the nest is sometimes built in the cavity of a wall, the birds

blocking up the entrance. A similar curious variation in the nesting-habits of the Martin has also been noticed in this country, for our friend Mr. Howard Saunders informs us that in June, 1893, he watched a colony of these birds on the Pembrokeshire coast, which had their nests *inside* the fissures of the rocks, and *completely out of sight*. He watched the birds for a couple of hours with the aid of a powerful binocular, and saw the sitting bird fed and afterwards "relieved guard," both birds coming out and one returning. The flying birds completely disappeared within the crevice, and the sitting bird never appeared at the entrance, so that the nest must have been some way inside. By landing in the bay below the crags, he was able to observe with certainty that there was not in that cliff a single external nest; all were in fissures. This colony consisted of about twenty pairs, and there were others in almost every gully, but none so easily observed as the one mentioned, near Newport, Pembrokeshire.

In English towns and villages the mud-built nest of the Martin is usually placed under the overhanging eaves of a house or cottage, and the little architects may be seen in spring-time busily engaged at the puddles in the road or at the sides of ponds, collecting the nodules of mud with which they build their nests. These are generally built in the shape of a half-cup with an aperture near the top, and the interior is lined with dry grass and a few feathers. About the latter the Martin seems to be very careful to have enough, as will be seen by the note given below. The greatest enemy to the peace of the harmless and useful little Martin is the mischievous Sparrow, who often enters into the labours of the hard-working little pair and appropriates the nest, though instances have been recorded in which the members of a colony of Martins have united together and walled up the intruder within the nest which he had so ruthlessly appropriated.

A most fervent protector of the Martin in this country was the late Colonel Russell, of Stubbers, near Rumford. One of the authors once paid a visit to this genial old naturalist and spent a couple of pleasant days in his society. Driving from the station to the Hall, a distance of a few miles, we passed several farms on the Colonel's estate, and his estimate of the intelligence of his tenants seemed to be in proportion to the extent in which each farmer backed up his efforts to protect the Martins and exterminate the House-Sparrows. We had not then heard of the Martin-loving enthusiasm of our host, but, sitting under the shade of the house on that beautiful summer evening, we listened to his arguments in favour of the Martin, while our postprandial talk took place to the accompaniment of the crooning twitter of dozens of Martins in the nests a few feet above our heads. The next morning we accompanied our host in his round of visits to the various colonies which flourished under his protection, and he explained to us that as there was no proper clay for nest-building within a quarter of a mile of the house, he was obliged to fetch a supply which he deposited near the edge of a neighbouring pond; and his first duty every morning was to moisten this clay with water, so that the birds should always have a supply of proper material for the building or repair of their nests. This proceeding on the part of the Colonel was thoroughly understood

by his little pets, a few of whom, undeterred by our presence, immediately descended and flew away with some morsels of clay. At the time of our visit, however, the nests were nearly all completed, and in fact many of them contained young birds; but in case any of his favourites should require material for the warm lining of their nests, the Colonel led the way to a hay-loft, the window of which he opened; taking a large bag of duck's feathers in his hand he whistled to the birds, and blew a handful of the soft feathers into the air. There was an immediate descent upon them, many of the birds seizing the feathers within a yard of our faces and carrying them off to line their nests. There was a large old-fashioned Dove-cot in the farmyard, which was simply hung with nests on all sides, row upon row, while all round the house were tiers of nests, not only situated under the eaves, but even placed at a moderate height above the ground. To ensure the building of the birds at this lower level, Colonel Russell adopted the method of placing a protecting ledge of wood, and he would often attach a few nodules of mud to encourage the birds to commence building. The very idea of a House-Sparrow daring to invade the sacred domain of a Martin was sufficient to arouse the Colonel to ire, and he believed that not one of the detested race was to be found within the precincts of the Martins' paradise. On our happening to mention casually that we had seen a cock Sparrow in the farmyard during the morning, the Colonel at once rose from the dinner-table and rushed out, oblivious of the fact that it was Sunday, seized a gun and hastily slipped in a cartridge. A few seconds after, a shot was heard, and the Colonel returned in triumph, bearing the dead body of the intruder. Altogether the visit paid to this excellent naturalist of the old school is one of the pleasantest reminiscences in the life of the writer.

In the 'St. James's Gazette' of September 17, 1888, occurs the following curious note on the nesting of the House-Martin:—"A correspondent writes from Chiswick:—'With a boy's curiosity I once destroyed by means of a pole a House-Martin's nest which was built under the eaves of the stables. Pity for the half-fledged nestlings thus brought to the ground moved me to obtain the aid of a groom, a ladder, and an old Thrush's nest. The young birds were placed in the strange nest, and this was put upon a small shelf in the position of the original Martin's nest. The parent birds not only returned to tend and rear their young, but they built a superstructure upon the top of the Thrush's nest, completely roofing it in, and thus producing a most interesting example of joint architecture.'"

The eggs of the Martin are white and somewhat glossy; they vary in number from four to six; they vary in length, according to Mr. Seebohm, from 0·8 to 0·7 inch, and from 0·55 to 0·52 in breadth.

The descriptions are taken from specimens in the British Museum, and the figures of the adult and young are from examples in the collection of Mr. Wyatt.

For the geographical distribution of the House-Martin, *vide infrà*, Plate 7 [Map].



Mintern Bros imp.

T.E. [illegible] CASHMIRIENSIS

CHELIDON CASHMIRIENSIS, *Gould.*

CASHMERE MARTIN.

Chelidon cashmeriensis, Gould, P. Z. S. 1858, p. 356; Adams, t. c. p. 494; Jerd. B. Ind. i. p. 167 (1862); Swinh. Ibis, 1863, p. 90; Gray, Hand-l. B. i. p. 74, no. 884 (1869); Jerd. Ibis, 1871, p. 353; Hume, Nests and Eggs Ind. B. p. 84 (1873); Swinh. Ibis, 1874, p. 152; Dresser, B. Eur. iii. p. 498 (1875); Brooks, Str. F. 1875, p. 231; Prjev. in Rowley's Orn. Misc. ii. p. 163 (1877); David & Oust. Ois. Chine, p. 539 (1877); Hume, Str. F. 1879, p. 84; Biddulph, Ibis, 1881, p. 47, 1882, p. 269.

Chelidon cashmiriensis, Sharpe, Cat. Birds in Brit. Mus. x. p. 90 (1885); Gigl. Avif. Ital. p. 187 (1886); Salvad. Elench. Ucc. Ital. p. 81 (1887).

Chelidon urbica (non L.), Ball, Str. F. 1878, vol. ii. p. 202; Butler, Str. F. 1880, p. 378.

Hirundo cashmiriensis, Seebohm, Hist. Brit. B. iii. p. 179 (1883).

C. similis *C. urbicæ*, sed minor, subtùs magis fuscescentior et caudâ minus furcatâ distinguenda.

Hab. in montibus Himalayensibus usque ad montes Kansuenses.

Adult male. General colour above deep blue-black, the hind neck and mantle varied with white bases; rump white tinged with smoky brown, and with faint dusky shaft-lines; wing-coverts brownish black, slightly washed with blue-black on the margins; quills dusky blackish, the innermost secondaries narrowly tipped with white; upper tail-coverts smoky white, with dusky shaft-lines, the long ones dull blue-black; tail-feathers blackish; crown of head like the back; lores blackish; ear-coverts and cheeks white, the upper edge of the former dusky blackish; under surface of the body dull whitish; throat, fore neck, and chest washed with smoky brown, a little darker on the flanks; thighs white; under tail-coverts white, with pale smoky-brown bases and with dusky shaft-lines; under wing-coverts and axillaries darker smoky brown, the outer small coverts edged with whitish; quills below dusky brown, inner edge of quills paler; iris brown. Total length 5 inches, culmen 0·3, wing 4, tail 2·2, tarsus 0·5.

Adult female. Like the male in colour. Total length 4·5 inches, wing 3·85, tail 1·75, tarsus 0·5.

Obs. Colonel Biddulph (Ibis, 1882, p. 269) in writing of the differences between *Chelidon urbica* and the present species speaks of the former bird as being pure white below, whereas *C. cashmiriensis* is "dusky beneath, with dusky mesial centres to the feathers of the abdomen, flanks, and rump."

The dusky coloration of the underparts cannot be regarded as a specific character, as old birds of *C. urbica* in worn plumage often partake of a dingy appearance on the underparts, while the young birds always have the throat washed with smoky brown. As regards the distinctness of the shaft-lines on the rump and under tail-coverts, great variation takes place in both species: sometimes it is very distinct, at other times scarcely perceptible; and it is quite as much a character of *C. urbica* as of *C. cashmiriensis*.

Chelidon cashmiriensis is extremely closely allied to *C. dasypus*, and positively only differs

from the latter species in wanting the black on the base of the chin and fore part of the cheeks. The two birds are no doubt distinct, but at present the paucity of specimens of *C. dasypus* which we have been able to compare, and the bad preparation of most of the series of *C. cashmiriensis* in the British Museum, have prevented our making such a thorough comparison of the two species as we should have liked to have done.

Compared with *C. urbica*, the Cashmere Martin is distinguished by its smaller size and less strongly forked tail. It is also much browner below, and it is especially recognizable by its dark brown under wing-coverts and quill-lining. Young birds of *C. urbica* are also sometimes smoky brown below, but this colour is always confined to the throat and chest, leaving the breast and abdomen white. Nearly the whole of the underparts of *C. cashmiriensis* are smoky brown, a little lighter on the throat, while the centre of the lower breast and abdomen are white.

Hab. Himalaya mountains from Cashmere eastwards as far as the mountains of Kansu. Wintering in the plains of India.

The Cashmere Martin is a small dusky representative of the Common Martin of Europe. It was first discovered by the late Dr. Leith Adams in Kashmir. He found it "common on the rocky banks of the rivers in Ladakh and Kashmir during the summer," and he supposed that it occurred on migration during the winter in the Punjab and the plains of India. Mr. Brooks procured it near Dhurmsala in June.

Dr. Jerdon, in his 'Supplementary Notes' to his 'Birds of India,' writes:—"I found this Martin breeding on a rock near Mattiana and Nagkandah in the Sutlej Valley in June, and Stoliczka found it breeding near the same locality, perhaps at the very same spot. I also found it in the Sind valley in Kashmir, in small parties; but, as a rule, I found it rare in Kashmir, notwithstanding its name." Mr. Brooks met with it breeding in Kashmir, a little to this side of Ahabad Serai, and also a few miles below Posiana, in the cliffs of the "Chitterpance" river. He also found it on the Sutlej, in the interior below Simla. At Gilgit, Colonel Biddulph states that it appears about the middle of April, and becomes very common in May.

Mr. Hume gives the following note in his work on the nests and eggs of Indian birds:—

"The Cashmere Martin breeds only in the interior of the Himalayas. It lays, as far as I *know*, only in April and May, but is said to have a second brood during the rains. Sir E. C. Buck wrote to me that 'there is a large colony of these birds, about $1\frac{1}{2}$ to 2 miles from Muttiana Dâk Bungalow, on the *old* road to Narkunda; their nests cover the roofs of hollows in the rock about 15 to 20 feet from the ground. Nest of mud, shallow, cup-shaped, with largish aperture, very close, one above the other in many instances. Young birds appeared fledged in June when I passed. Birds frequented breeding-places at dusk in great numbers. The hollows are almost overhanging the old road.'"

In the Hume collection is a specimen obtained by Colonel Delmé Radcliffe at Thundiana in Hazara, in April. Mr. Brooks found the species in Kumaon, and on his journey from Masuri to Gangaotri he obtained a specimen between Suki and Derali,

where they were flying about in considerable numbers. In the Hume collection is a specimen obtained in Gurwhal in December, and also one procured in native Sikhim in April by the late Mr. Mandelli's hunters. Dr. Jerdon has also stated that he procured one at Darjiling. The only naturalist who has as yet procured specimens in India away from the Himalayas is Mr. W. T. Blanford, who met with the species in the Bilaspur district in the Central Provinces.

The following account of the species was given by the late General Prjevalski in his memoir on the 'Birds of Mongolia':—

"Was found in great numbers in the Ala-shan mountains and in Kan-su. In S.E. Mongolia they are rather scarce; they might possibly breed in Hara-narin-ul, but certainly do not occur in Muni-ul at any other time than during migration. It avoids the habitations of man, and keeps to the wild rocks of lofty mountains. In Kan-su, for instance, it breeds mostly in the alpine region, at heights from 10,000 to 12,000 feet above the sea; it is very rare in the median zone, and descends to the low parts when in search of food.

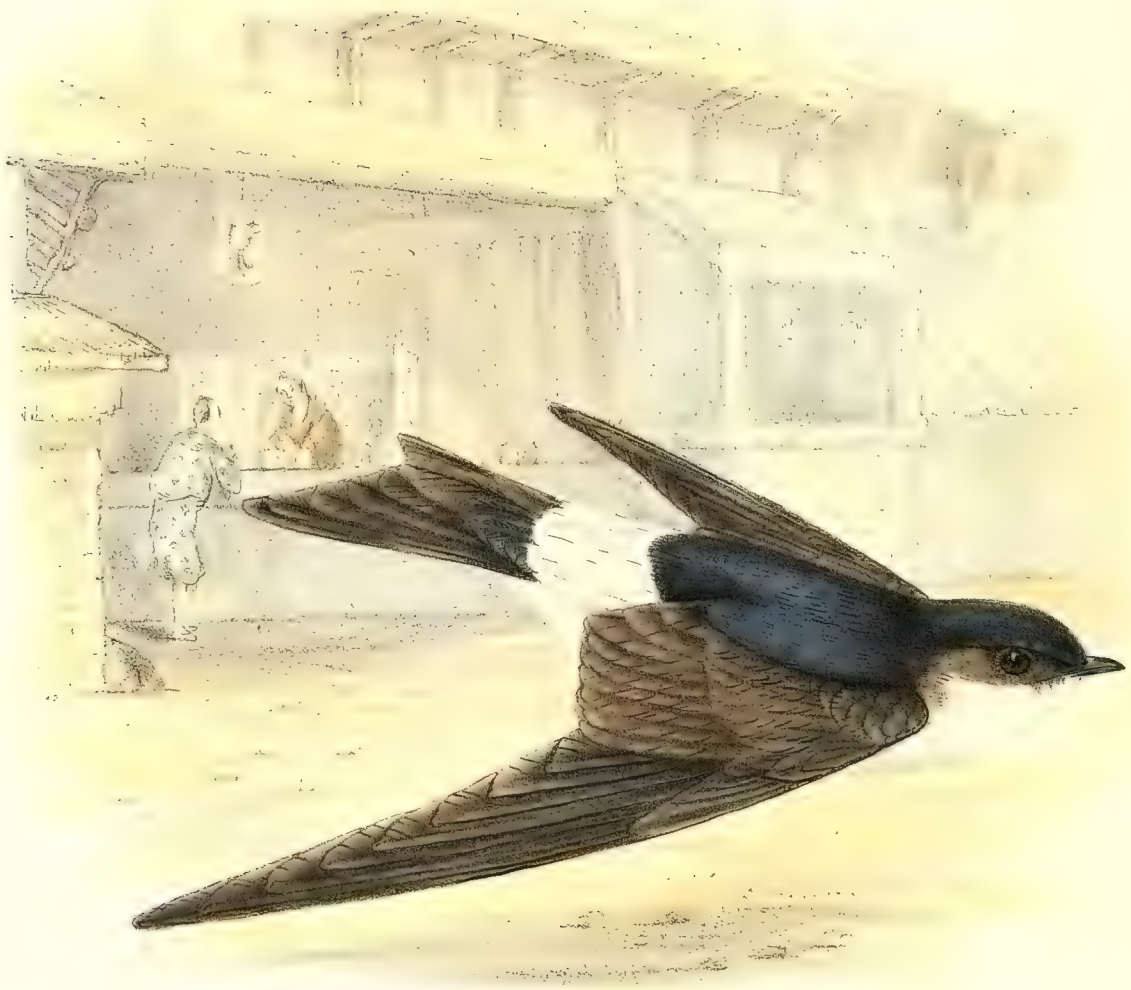
"The nests, several in a row, are stuck to overhanging rocks, and by their shape resemble those of *Hirundo gutturalis*. On the 25th of June I climbed up to two, and found in one of them two and in the other four young, almost fledged.

"In Kan-su the first birds arrived on the 20th of April, and left about the middle of August. We at this time observed tolerably large flocks flying southward."

The single specimen obtained by General Prjevalski has been most kindly submitted to us by Dr. Pleske, and we find that it is in every way identical with Himalayan specimens.

The species has also been recorded from Italy by Professor Giglioli, a specimen having been obtained near Florence on the 13th of October, 1885, which the above-named naturalist is inclined to refer to *C. cashmiriensis*. Count Salvadori, however, believes that the characters quoted indicate that the bird in question was only a small variety of the Common Martin.

The descriptions are taken from specimens in the British Museum, and the figures are drawn from examples in the Hume collection.



C. W. W. del

CHELIDON DASYPUS

Mintern Bros

CHELIDON DASYPUS, *Bp.*

BLAKISTON'S MARTIN.

Chelidon dasypus, Bp. Consp. i. p. 343 (1850, ex Temm. MS.); Horsf. & Moore, Cat. B. E.I. Co. Mus. i. p. 384 (1854); Gray, Hand-l. B. i. p. 74, no. 883 (1869); Dresser, B. Eur. iii. p. 498 (1875); Sharpe, Cat. Birds in Brit. Mus. x. p. 91 (1885).
Chelidon blakistoni, Swinh. P. Z. S. 1862, p. 320; id. Ibis, 1863, p. 90; Whitely, Ibis, 1867, p. 196; Gray, Hand-l. B. i. p. 74, no. 882 (1869); Swinh. Ibis, 1874, p. 152, pl. vii. fig. 1; id. Ibis, 1875, p. 448; Blakist. & Pryer, Ibis, 1878, p. 231; iid. B. Japan, p. 139 (1882); Jouy, Pr. U.S. Nat. Mus. i. p. 290 (1882).
Delichon (?) *dasypus*, Salvad. Ucc. Born. p. 127 (1874).
Hirundo dasypus, Seebohm, Hist. Brit. B. ii. p. 179 (1883).

Ch. subcaudalibus albis; rectrice extimâ concolore; supracaudalibus longioribus nigris, reliquis albis; mento summo et genis basaliter nigris; corpore subtùs fumoso lavato.

Hab. in insulâ 'Borneo' dictâ et in insulis Japonicis.

Adult male (type of species). General colour above dull purplish blue, with white bases to the feathers; wing-coverts and quills blackish with a slight blue gloss; rump and upper tail-coverts pure white, with narrow dusky shaft-lines; the long upper tail-coverts and tail-feathers blackish with a faint blue gloss; tail very slightly forked; head like the back; lores and feathers below the eye black; ear-coverts dull purplish blue, as also the sides of the neck and sides of upper breast, the latter slightly mottled with white bases; fore part of cheeks and a spot at the base of the chin black; hinder part of cheeks and under surface of body creamy buff, washed with smoky brown on the breast and flanks, with a little purer white on the fore neck and abdomen; under tail-coverts smoky brown, broadly edged with whitish, the long coverts blacker, with broad whitish edgings; axillaries and under wing-coverts dark brown, the small coverts near the edge of the wing edged with pale smoky brown; quills dull ashy brown below: "bill black; iris black" (*H. Whitely*). Total length 4·6 inches, culmen 0·3, wing 4·1, tail 1·75, tarsus 0·5. (*Mus. Lugd.*)

Adult female. Similar to the male in colour, but with one of the central long upper tail-coverts smoky brown, with a black shaft and a whitish margin at the tips; the under surface of the body much whiter, with a smoky buff tinge on the throat, abdomen, and sides of body; the under tail-coverts white with a blackish shaft-streak. Total length 4·7 inches, culmen 0·35, wing 4·3, tail 1·8, tarsus 0·45. (*Mus. Lugd.*)

Hab. Borneo; Japan. Doubtless occurring in intervening localities during migration.

Blakiston's Martin is easily distinguished from its other Palæarctic allies by the black on the chin and bases of the cheeks, and by the shape of the tail, which is much less forked than in *Chelidon urbica* or *C. cashmiriensis*. It was originally described from

Borneo, and we have examined the type specimens in the Leyden Museum and compared them directly with a Japanese example. There can be no doubt as to the specific identity of these specimens, although from such distant localities.

The Bornean specimens were for many years the sole representatives of the species in the museums of Europe, and it is not a little extraordinary that the species has since escaped the notice of all the excellent collectors who have worked in that island. Nor has it yet been found in any of the Philippine Islands, although, as was pointed out by the late Consul Swinhoe, it probably goes southwards with other Japanese species (such as *Sturnia pyrrhogenys*) which do not visit China on migration, but winter in the Philippines (*cf.* Ibis, 1874, p. 152).

For the discovery of the present species in Japan we are indebted to that veteran naturalist Captain Blakiston, after whom the specimens were named by Consul Swinhoe: but later on the latter gentleman had great doubts as to the distinctness of his *Chelidon blakistoni* from *C. dasypus* of Borneo, and, as it has turned out, the identity of the two is now fully established.

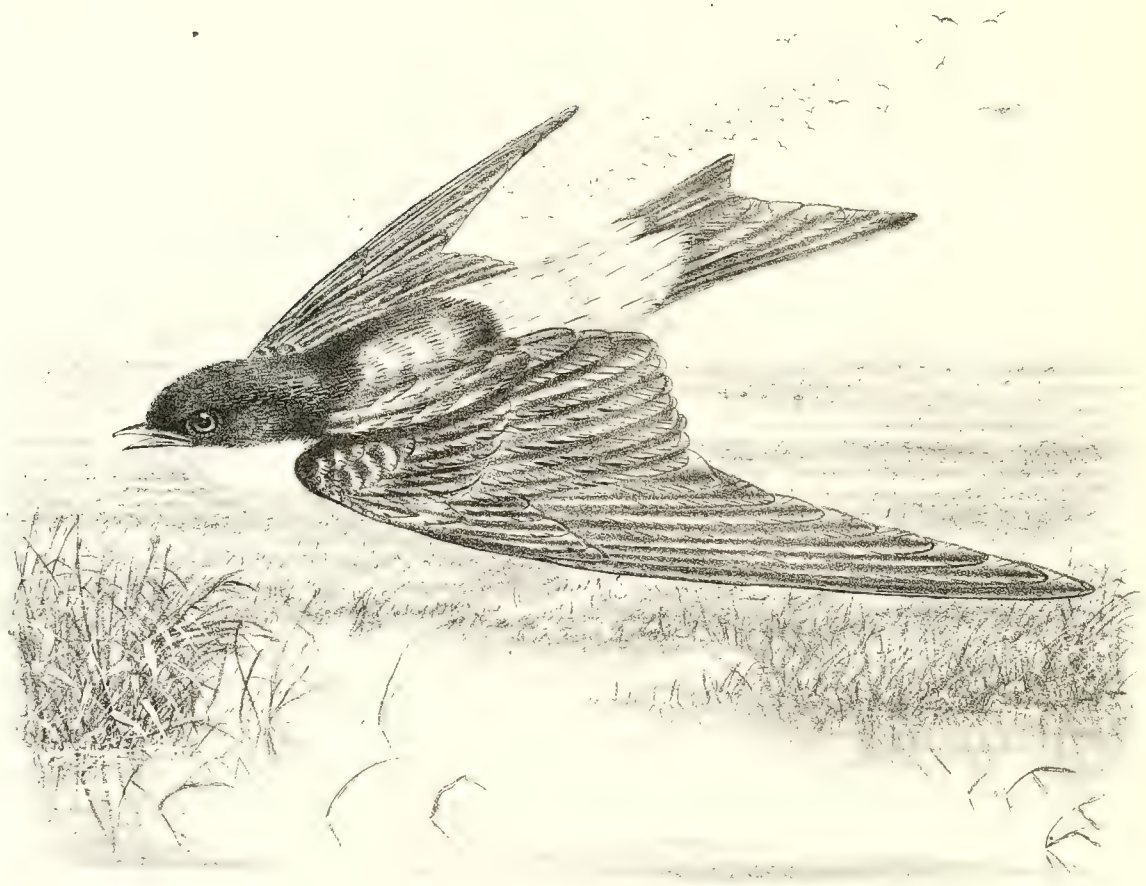
Mr. Henry Whitely was the next observer who sent specimens to Europe. He found it near Hakodate, where he procured two specimens on the 17th of April, but he remarked that it was not common there. These two specimens are in the British Museum.

In the list of the Birds of Japan written by Capt. Blakiston and Mr. H. Pryer, we find the following note on this Martin:—"This species was collected first at Hakodate, where it breeds in numbers under overhanging cliffs and in caves. It has since been found in other parts of Japan, Fuji, Nikko, and on the summit of Ominesanjo in Yamato, being the common High-mountain and Cliff-Martin of the country. It is very abundant at Chinsenji, where it may be seen flying over the lake and about the Kegon waterfall in thousands. Eggs white. Nest outwardly of mud, lined with grass and feathers, generally placed in a cranny of rocks." In the 'Amended List' of Japanese birds by Capt. Blakiston, the present species is stated to be common to Yezo and Japan generally.

Mr. Jouy writes:—"We found these birds breeding in considerable numbers on the sides of an inaccessible cliff or chasm on Fuji-yama, above the limit of forest growth. Their nests must have been composed largely of saliva, as there is no mud in that volcanic region. Many of the birds, when shot, had their mouths full of fine scoriæ dust, of which they were evidently making their nests. We saw the birds on some of the higher passes in Shinshin in September." All Mr. Jouy's specimens were obtained in July.

It will be seen from the above notes that the species is found in Japan at least from April, when Mr. Whitely's specimens were procured, to September, when Mr. Jouy noticed it. Nothing has been recorded of the time of migration, though we presume that, like other Martins, the present species leaves its northern residence in the winter, and it is then doubtless that it occurs in Borneo.

The descriptions of the plumages are taken from the British-Museum 'Catalogue of Birds.' The Plate is drawn from a skin in Mr. H. Seebohm's collection.



C.W.W. del.

Mintern Bros. imp

CHELIDON LAGOPODA.

CHELIDON LAGOPUS (*Pall.*).

PALLAS'S MARTIN.

Hirundo lagopoda, Pall. Zoogr. Ross.-Asiat. i. p. 532 (1811); Severtz. Turkest. Jevotn. p. 67 (1873); Dresser, Ibis, 1876, p. 188; Seebohm, Brit. B. iii. p. 179 (1884); Stejn. Bull. U.S. Nat. Mus. no. 29, p. 323 (1885).

Hirundo urbica (non L.), Middend. Reis. Sibir., Zool. p. 189 (1851); Schrenk, Amur. Reise, p. 388 (1859); Radde, Reis. Sibir., Vög. p. 280 (1883).

Chelidon urbica (non L.), Tickell, J. A. S. Beng. xxiv. p. 227, footnote (1855); Blyth, B. Burm. p. 127 (1875); Hume & Davison, Str. F. 1878, p. 45; Hume, Str. F. 1879, p. 84 (pt.).

Chelidon whitelyi, Swinh. P. Z. S. 1862, p. 320; id. Ibis, 1874, p. 152, pl. vii. fig. 2; Dresser, B. Eur. iii. p. 498 (1875).

Chelidon lagopoda, Swinh. Ibis, 1863, p. 91; id. P. Z. S. 1863, p. 287; Gray, Hand-l. B. i. p. 74, no. 881 (1869); Swinh. P. Z. S. 1871, p. 347; Tacz. J. f. O. 1872, p. 352, 1874, p. 334; Dybowski, J. f. O. 1876, p. 192; Tacz. Bull. Soc. France, i. p. 134 (1876); David & Oust. Ois. Chine, p. 130 (1877); Seebohm, Ibis, 1879, p. 17; Severtz. Ibis, 1883, p. 80; Oates, B. Brit. Burm. i. p. 311 (1883).

Chelidon lagopus, Sharpe, Cat. Birds in Brit. Mus. x. p. 93 (1885).

C. subcaudalibus albis: supracaudalibus omnibus albis uropygio concoloribus.

Hab. in Asiâ orientali et centrali.

Adult female. General colour above glossy blue-black, the hind neck and mantle varied with white bases to the feathers; wing-coverts and quills blackish brown, the former slightly glossed with blue-black on the margins; rump and all the upper tail-coverts white, washed with smoky brown, with dusky shaft-lines; tail-feathers blackish brown; lores black, as well as the feathers round the eye; cheeks and ear-coverts white, the upper margin of the latter blue-black; under surface of body white, the throat tinged with reddish buff; the sides of the body and flanks pale smoky brown; thighs and plumes of leg white; under tail-coverts white, with distinct shaft-lines of dusky brown; under wing-coverts and axillaries dark smoky brown, the outermost small coverts tipped with white; quills dusky brown below, paler along the inner web. Total length 4·6 inches, culmen 0·3, wing 4·1, tail 2·05, tarsus 0·45.

The type of *C. whitelyi*, Swinh., in Mr. Seebohm's collection, differs from the bird described only in having the dusky shaft-lines on the rump and upper and under tail-coverts less distinct, and in wanting the rufescent tinge on the throat.

Hab. Siberia from the Yen-e-say valley eastwards, probably as far as Kamtschatka. Southwards throughout Mongolia and China to Turkestan and occasionally as far south as Burmah.

This is the eastern representative of our Common Martin, from which species it differs in its less forked tail, and in the colour of the upper tail-coverts, which are pure white like the rump, whereas in *C. urbica* they are black.

It ranges from the valley of the Yen-e-say River across Siberia, and even occurs in Kamtschatka, according to Pallas; but on this point Dr. Stejneger writes:—"Nothing definite is known, and the statement is very doubtful, though it may be remembered that it is said to occur at Gischiginsk." Pallas states that it nests in houses and is strictly protected by the natives, who do not like to see the birds shot. It builds under rafters and roofs of houses, and he says that in the sandy banks of the Irtisch River it makes holes in the river-banks. This last statement may be received with some doubt. In Dauuria the same author states that it also breeds, arriving there in April, and that the nests are similar to those of *C. urbica*. Dr. Dybowski met with the species on the Argun River in Dauuria, and Dr. Taczanowski says that the species is common over the whole of Eastern Siberia and extends to the southern border of the Ussuri country.

Radde collected a specimen on the 9th of May at Tarei-nor. He says that the species comes during the last days of April. He saw it on the 26th of that month in Kiachta, and to the eastward of the Apple Mountains it was also observed about the same time near Tschita. During von Middendorff's travels in Siberia, he saw a flock on the 10th of May on the western slope of the Stanovoi Mountains, and again he noticed it on the Yen-e-say River at about 70° N. lat. He also states that it comes yearly to Turucháns'k.

Von Schrenk mentions that a specimen was procured by him at Nertschinsk on the 7th of May. He never met with it in Lower Amoor-Land, and he draws attention to the fact that Middendorff only found it on the western slope of the Stanovoi Mountains, and not in the Udskoi Ostrog district, which is continuous with Lower Amoor Land. From this he gathers that the Martins only remain in these districts during migration, and that they pass on to live in the inaccessible mountains, and so they escape the observation of the traveller.

Dr. Dybowski says that in Eastern Siberia this Martin is common at the beginning of May, building under the eaves of houses. A few pairs were found at the foot of naked spurs of the Chamardaban Mountains. They were also nesting on the rocks near a waterfall on the river Bystra, about 4000 feet above the level of Lake Baikal. He also saw it near the Changinsk post, about 4300 feet above the sea-level. Six or eight eggs are laid in the middle of June. They leave the vicinity of Kultuk towards the end of August or the beginning of September.

The following note on the species is given by Mr. Henry Seebohm in his account of his travels in Siberia:—"This bird was the only *Chelidon* which I obtained on the Yen-e-say. Several pairs arrived on the Arctic circle about the 11th of June, and were soon busy hawking for flies and examining their old nests. In the village of Koo-ray-i-ka, opposite the mouth of the river of that name, they swarmed in thousands. The nest

exactly resembles that of our House-Martin, but the birds seemed to be very capricious in selecting a house where they might trust their young. One house in particular seemed to be the favourite; and here the eaves were crowded with rows of nests, in some places three or four deep. The eggs are, if anything, larger than those of our bird, but are also pure white. I observed this bird up to 69° N. lat., where a few pairs were breeding. I could not perceive any difference in the habits or notes of these birds and those of our own species. On the return journey I noticed a colony, doubtless of these birds, which had built their nests against the limestone cliffs of the Kah'-nin Pass, as our bird frequently does in the limestone districts of Yorkshire, the Parnassus, &c. As I passed through Yen-e-saisk in the middle of August, the House-Martins were swarming on the church-towers, preparing for departure on their autumn migration. When these Swallows began to make preparations for breeding, the 'Thames' was riding at anchor in the Kooray-i-ka. Some scores of these birds evidently took a great fancy to the ship, and began to build their nests on the sails under the yard-arms."

According to the late Dr. Severtzoff the present species occurs on passage in Turkestan, and probably breeds there; but he did not meet with it on the Pamir. General Prjevalsky found it breeding in Mongolia, to the north-east of Yulduz.

Mr. Fleming, R.A., procured a specimen near Pekin which the late Mr. Swinhoe described as a new species under the name of *Chelidon whitelyi*, though he soon afterwards found that it was the same as *C. lagopus*. "This specimen," he writes, "is the only one of this species from China that I have ever handled; and the only time that I ever saw the bird alive was on the 8th of April, 1869, when, on some hills near the river Yangtsze, about 1000 miles up its course, a pair of white-rumped Martins flew about over the heads of our party, in company with many Dauurian and a few Common Swallows."

Abbé David has also met with the species in China, nesting on the lofty rocks of the mountains to the west of Pekin, as well as at Moupin and in the Central provinces. They seemed to differ from the Common Martin in that they were nowhere plentiful, and he never observed them in towers or in the immediate vicinity of buildings.

From the above *résumé* of this bird's history it will be seen that we do not know much of its winter home. Colonel Tickell writes that he found Martins in great numbers near Moulmein in Burmah, where they "appear from time to time; not constantly, as does *H. rustica*." From Tickell's description and figure there is, as Mr. Seebohm has pointed out (Hist. Brit. B. ii. p. 179, note), no doubt about the species, as the bird is described and figured with the upper tail-coverts *white*; but no one has met with it in Burmah since—neither Mr. Oates, Captain Bingham, nor Mr. Davison—and it cannot be considered a regular winter visitant to that country. Colonel Tickell would seem to have been witness to an accidental migration of the species.

The description and the figure in the Plate are both taken from a specimen kindly lent to us by Mr. Seebohm.

CHELIDON ALBIGENA, *Heugl.*

HEUGLIN'S MARTIN.

Chelidon albigena, Heugl. J. f. O. 1861, p. 419; id. Orn. N.O.-Afr. i. p. 169 (1869); Sharpe, P. Z. S. 1870, p. 293; Dresser, B. Eur. iii. p. 499 (1875); Sharpe, Cat. B. Brit. Mus. x. p. 94 (1885).

C. subcaudalibus albis: rectricis extimæ pogonio interno versùs basin albo-notato.

Hab. in Africâ septentrionali-orientali.

Adult. Similar to *C. urbica*, but differs in the throat being pure pale dusky ash-colour, with a moustachial line of pure white very distinctly indicated; sides of breast, flanks, and under tail-coverts delicately shaded with smoky grey; outer webs of under tail-coverts with conspicuous subterminal dusky spots, the shafts blackish; rump whitish, the middle feathers dusky ash-colour and marked with some duller spots; tail emarginate, slightly extending beyond the wing (to the extent of 2 lines); inner web of outer tail-feathers marked near the base with a conspicuous whitish spot: bill black; claws pale horn-colour; iris dusky. Total length 5″, wing 3″ 11‴, tail 2″ 3½‴, tarsus 5‴·8, culmen 2‴·8.

Hab. Bogos Land, North-east Africa.

This species, if distinct species it be, has not been rediscovered since the late Baron von Heuglin described it thirty years ago, and we have nothing to add to the description which he then gave. He considered it to be decidedly different from *C. urbica*, though of the same size as the latter. He writes:—"The well-defined white cheek-stripe, the slightly forked tail, and the white spot on the inner web of the outer tail-feather are the striking characters which distinguish the species, apart from the colour of the under surface of the body.

"I only met with it on one occasion, at the beginning of August 1861, in a somewhat large flock, after a violent thunderstorm, near Keren, in the Bogos country. I shot several birds, which, on the whole, were similarly marked. I took them for Common Martins until I saw the grey colour of the under surface; in only one of the specimens is the light colour on the inner web of the outer tail-feather almost entirely absent."

The description is copied from that given in the well-known work of Baron von Heuglin, on the Ornithology of N.E. Africa.

For the geographical distribution of Heuglin's Martin, *vide infrà*, Plate 7 [Map].



Mintern Bros. imp.

CHELIDON NIPALENSIS (*Moore*).

HIMALAYAN MARTIN.

Delichon nipalensis, Hodgs. Icon. ined. Brit. Mus., App. pl. xiv. (no. 963); Moore, P. Z. S. 1854, p. 104, pl. lxiii.; Horsf. & Moore, Cat. B. E. I. Co. Mus. i. p. 384 (1854); Swinh. Ibis, 1863, p. 90; Gould, B. Asia, i. pl. 31 (1868); Hume, Str. F. 1879, p. 84, 1888, p. 29.

Chelidon nipalensis, Jerd. B. Ind. i. p. 168 (1862); Gray, Hand-l. B. i. p. 74, no. 885 (1869); Blanf. J. A. S. Beng. xli. p. 156 (1872); Dresser, B. Eur. iii. p. 499 (1875); Godwin-Austen, J. A. S. B. xlv. pt. 2, pp. 68, 193 (1876); Sharpe, Cat. Birds in Brit. Mus. x. p. 95 (1885).

Hirundo nipalensis, Seebohm, Hist. Brit. B. iii. p. 179 (1883).

C. caudâ quadratâ: subcaudalibus nigris.

Hab. in subregione Himalayensi usque ad provinciam Manipurensem.

Adult male. General colour above glossy blue-black, with a slight mottling on the hind neck and mantle, produced by the white bases to the feathers showing through; wing-coverts glossy blue-black like the back, the primary-coverts and quills black, washed with glossy blue-black on the edges; rump white, the lower feathers barred with black tips; upper tail-coverts glossy blue-black, the basal ones white, tipped broadly with blue-black; tail-feathers black glossed with steel-blue; lores, feathers round the eye, and chin velvety black; cheeks, ear-coverts, and throat glossy blue-black; remainder of under surface from lower throat downwards white, the feathers on the former part slightly mottled with blackish bases; flanks slightly washed with smoky brown; sides of upper breast blue-black; thighs and tarsal plumes white; under tail-coverts glossy blue-black; under wing-coverts and axillaries blackish, glossed with blue-black; quills dusky below, paler along edge of inner web. Total length 4·2 inches, culmen 0·25, wing 3·6, tail 1·4, tarsus 0·45.

Adult female. Similar in colour to the male. Total length 4 inches, culmen 0·3, wing 3·45, tail 1·35, tarsus 0·45.

The series of specimens in the Hume collection in the British Museum exhibits considerable difference as regards the colour of the throat and the amount of barring on the rump. Some birds have a black throat, and some have the throat white, and we have not been able to satisfy ourselves that these differences in the colour of the throat depend on the season of the year; for the British Museum possesses specimens procured in January, April, July, and from August to December, in none of which can we discover any sign of variation between specimens killed in winter and summer. The nesting-season is probably the same as that of the more northern Martins, and the moulting-time (as shown by the Hume specimens) is in August and September; but

we are yet uncertain as to the plumage of the young. Those which seem to us to be immature are much duller in colour than the adults, have scarcely any bars on the rump, and have whiter throats. The blacker throats are probably signs of the older birds; but the changes of plumage in the species are at present not at all understood, and there are apparently no marked signs of young plumage, as in the other Martins, where the white-edged secondaries proclaim the immaturity of the specimen at a glance. Some specimens of *C. nipalensis* have a brownish shade on the sides of the body, but we have not been able to decide that this is a sign of immaturity.

Hab. The Himalayas from Naini Tal to Sikhim, and thence to the Naga and Dafla hills, and the hills of Manipur.

In describing the present species Mr. Moore proposed the generic name of *Delichon*, an anagrammatic rendering of *Chelidon*, for its reception. As *Dacelo* is an accepted genus of Kingfishers, although formed from the component letters of *Alcedo*, there is no reason why *Delichon*, which has a fine classical Grecian aspect, should not be employed, as it is of course open to any one, hard up for a new generic name, to throw the letters of *Alcedo* or *Chelidon* into the air, and then walk round them till a presentable combination becomes visible. We do not of course suggest that an excellent ornithologist like Mr. Moore adopted this plan; but we have been credibly informed that it was in this way that the name *Dacelo* was called into existence. Our reasons for not adopting *Delichon* are simply that the genus would rest on a square form of the tail for its separation from *Chelidon*; and as the shape of this tail varies in each species of Martin, we do not feel it possible to separate the Nipalese species. When the nesting-habits of *C. nipalensis* are brought to light there may be found some reasons for modifying our opinion; but from the facts known at present, we do not see any necessity for separating the Himalayan Martin from the other members of the genus *Chelidon*.

The species was discovered by Mr. Hodgson in Nepal during the later years of his residence in that country, and it does not figure in his earlier lists. No notes on its capture are preserved in the MSS. which he presented to the Zoological Society, and his first specimens were given to the India Museum in 1854. Dr. Scully does not seem to have met with it in Nepal.

The most westerly locality whence we have seen specimens has been Naini Tal, from which place there are three good skins in the British Museum: the collector is unknown, but the specimens have evidently been procured by a painstaking naturalist, as they have the sexes very carefully marked. They are labelled "Naini Tal, 8000 feet, April and July; common. Large flights beating along the hill-sides."

The series of specimens in the Hume collection from Native Sikhim and Sikhim were all obtained by the late Mr. Mandelli, in August and September, and from November to January. Mr. H. J. Elwes procured a specimen in Sikhim in October, so that it must be resident in that part of the Himalayas from August to January. Jerdon found it at Darjiling at about 4500 feet of elevation, in the valley of Rungnoo, near the

mineral springs. It was flying over the jungles in large flocks, towards the close of the rains and during the cold weather. Mr. Wyatt visited the Runjeet valley in the Himalayas about the middle of March, but did not see anything of this species. Major Bingham informs him that it was too early in the season. Mr. W. T. Blanford found this Martin tolerably common in the Tístá valley, between Chungtan and Tamlúng, often hunting in company with *Collocalia nidifica*. None were seen above about 5000 feet elevation.

Mr. Hume has given the following account of the species in Manipur, and he has also summarized the records of Colonel Godwin-Austen. Unfortunately the Manipur specimen procured by Mr. Hume was no longer in his collection when transferred to England, having been eaten by a rat.

"I only once procured or saw this in Manipur, and that was near Tankul-Hoondoong in the eastern hills, where, on a peak about 6000 feet high, a small flock suddenly appeared about us, hawking at a tremendous pace, and equally suddenly disappeared, giving me only time to drop a single bird, a male, which measured:—Length 4·4; expanse 10·2; tail 1·8; wing 3·65; tarsus 0·45; bill from gape 0·4: weight 0·45 oz. Bill brown, paler at gape; irides (shot out)? brown; tarsi and toes fully feathered; soles fleshy; claws whity-brown.

"According to the Tankuls who were with me, small flights of the species are occasionally seen in this locality, but are more common in the hills further north. At the same time I am very doubtful whether they really distinguish between this species and *Cotyle riparia* and *C. sinensis*; flights of the former of which at any rate do, at times, as already recorded, appear high up on the eastern hills.

"I have never received this from any other part of Assam myself, but Godwin-Austen records it in his fifth list from Koonchungbhum, in his Dafla hill list from above Doripu, and again from the Eastern Naga Hills. So far as we know, it does not extend to Burmah, and Tankul-Hoondoong is the most southern locality at which it has been obtained."

The descriptions have been taken from the specimens in the British Museum. The Plate represents the Runjeet valley and the snows of Sikhim. The highest mountain is 'Kanchinjinga.'

APPENDIX

TO THE

GENUS CHELIDON.

CHELIDON CASHMIRIENSIS [*anteà*, p. 19].

Add :—

Chelidon cashmiriensis, Blanf. J. A. S. Beng. xli. p. 47 (1872); Giglioli & Manzella, Iconogr. Avif. Ital. part 42 (1888); Gigl. I. Resoc. pt. ii. Avif. Locali, p. 647 (1890).

Chelidon kashmiriensis, Oates, ed. Hume's Nests & Eggs Ind. B. ii. p. 177 (1890); id. Faun. Brit. Ind., Birds, ii. p. 269 (1890); id. t. c. ii. p. 647 (1890).

The following note by Mr. Blanford on the occurrence of this species in Sikhim was accidently omitted in the article on this species :—"Common on the Cholá range about the upper limit of forest, 12,000 to 13,000 feet. It was chiefly seen hunting over streams and lakes."

Mr. Oates writes :—"This species ascends the Himalayas up to 12,000 or 13,000 feet, and it appears to breed along the whole range, from Kashmir to Sikhim. Its range in the plains is quite unknown."

The plate given by Dr. Giglioli and Signor Manzella in the 'Iconographia' of the bird identified by the former naturalist as *C. cashmiriensis* shows that it was, as suspected by Count Salvadori, only a small individual of *C. urbica*.

For the geographical distribution of this species, *vide infrà*, Plate 8 [Map].

CHELIDON DASYPUS [*anteà*, p. 23].

Add. :—

Chelidon dasypus, Blakist. Amend. List B. Jap. p. 14 (1884); Everett, J. A. Soc. Straits Branch, 1889, p. 134; Seeb. B. Jap. Emp. 144 (1890).

In our account of this species we gave the habitat as Borneo and Japan, "doubtless occurring in intervening localities during migration." We have since seen a specimen in Mr. Styan's collection from Formosa, which appears to indicate the route by which the species reaches its winter home. Up to the present time its occurrence in the Philippines has not been notified, but it can scarcely be doubted that it passes through the Archipelago on its winter migration.

Mr. Seebohm says that it is a very common summer visitor to all the Japanese Islands, breeding on the cliffs and in the caves; he states that the eggs in the Pryer collection do not differ from those of the European House-Martin.

For the geographical distribution of this species, *vide infrà*, Plate 8 [Map].

CHELIDON LAGOPUS [*anteà*, p. 25].

Add:—

Chelidon lagopus, Pleske, Mém. Acad. Imp. Sci. St. Pétersb. (7) xxxvi. p. 41 (1888); Nikolski, Ile Sakhal. p. 193 (1889); Oates, Faun. Brit. Ind., Birds, ii. p. 270 (1890).

Chelidon urbica lagopoda, Tacz. Orn. Sibér. Orient., Mém. Acad. Imp. Sci. St. Pétersb. (7) xxxix. p. 184 (1891).

A VERY complete account of this species in Eastern Siberia is given in the posthumous work of the late Dr. Taczanowski. To the information given in our article, Dr. Taczanowski adds that the present species was found on the island of Sakhalin by Mr. Nikolski, nesting on the rocks of the Three Brothers on the sea-shore, in the neighbourhood of Alexandrowka, along with Swifts. Dr. Pleske records it from Ischinas, where it was obtained by the late Mr. Russow.

With regard to the occurrence of the species in Burma, Mr. E. W. Oates says that he has frequently seen large flocks of a Martin in Southern Pegu, which were probably of the present species, but he failed to secure specimens.

For the geographical distribution of this species, *vide infrà*, Plate 8 [Map].

CHELIDON NIPALENSIS [*anteà*, p. 31].

Add:—

Chelidon nepalensis, Oates, Faun. Brit. Ind., Birds, ii. p. 271 (1890).

For the geographical distribution of this species, *vide infrà*, Plate 7 [Map].

In the accompanying Table illustrating the ranges of the various species of Martins, the signs are those adopted by the Second International Ornithological Congress at Budapest in 1891.

GEOGRAPHICAL DISTRIBUT

⟷	Migratory.	△	Accli
⟷/⟶	Bird of passage.	○	Perm
⟷⊖⟶	Remains locally during the winter.	⊂⊃	Chan
⟷△⟶	Transplanted.	∼	Visit
⟷*⟶	Winter resident.	≈	Acci

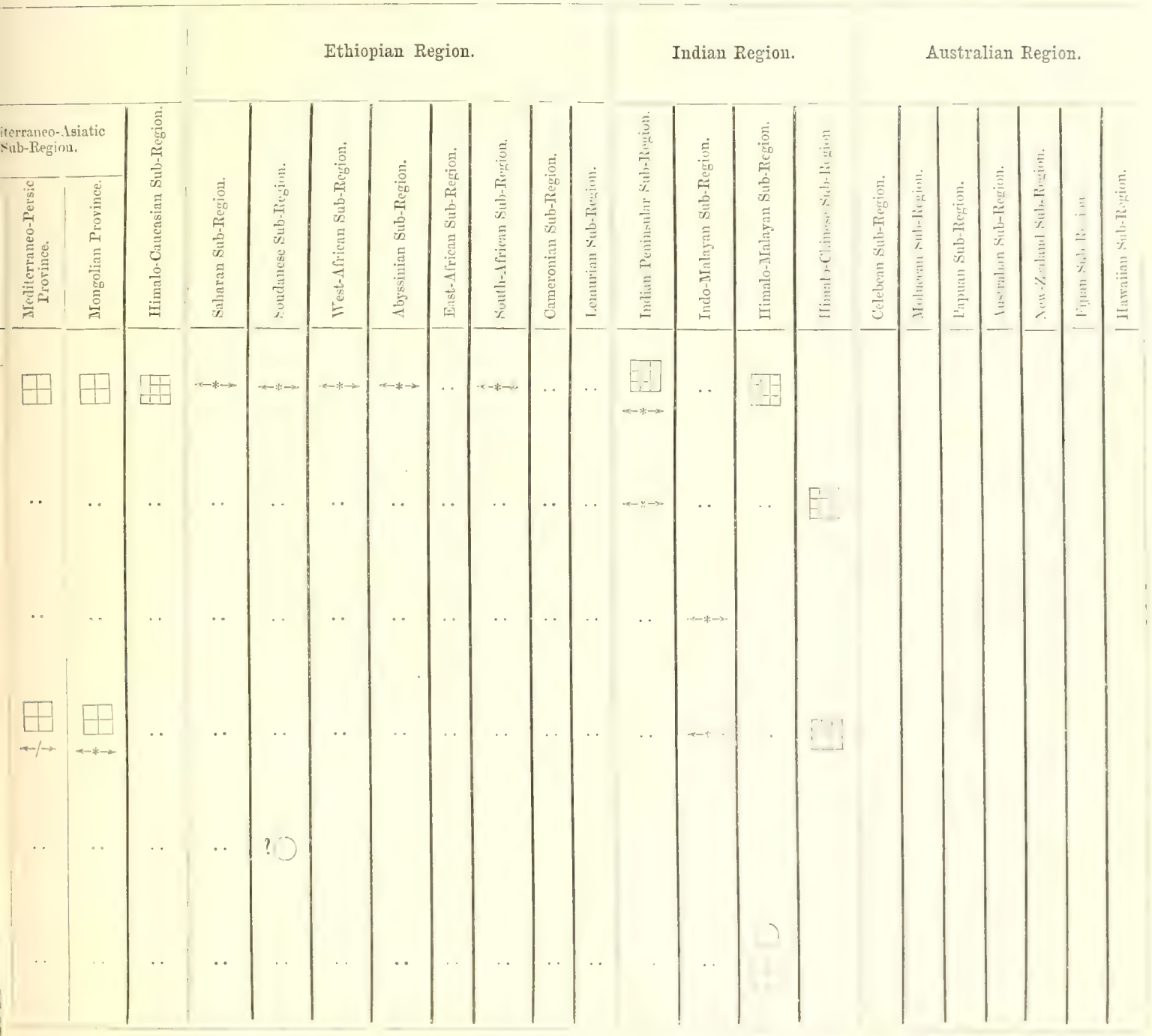
	Nearctic Region.										Neotropical Region.									
	Arctic Sub-Region.		Cold Temperate Sub-Region.				Warm Temperate Sub-Region.				Antillean Sub-Region.	Central American Sub-Region.		Sub-Andean Sub-Region.	Amazonian Sub-Region.	Brazilian Sub-Region.	Patagonian Sub-Region.	Arctic Sub-Region.	Eurasian Sub-Region.	
							Humid Province.		Arid Province.											
	Arctic Province.	Alaskan Arctic Province.	Hudsonian Province.	Canadian Province.	Sitkan Province.	Aleutian Province.	Appalachian Sub-Province.	Austro-Riparian Sub-Province.	Campestrian Sub-Province.	Sonoran Sub-Province.		Mexican Province.	Isthmian Province.						European Province.	Central Siberian Province.
1. *C. urbica*	..	..	..	..	..	..	..	.	..	..	..	..	..	..	..	..	..	□	⊞	..
2. *C. cashmiriensis* ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
3. *C. dasypus*	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
4. *C. lagopus*	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	⊞	..	⊞
5. *C. albigena*	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
6. *C. nipalensis*	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

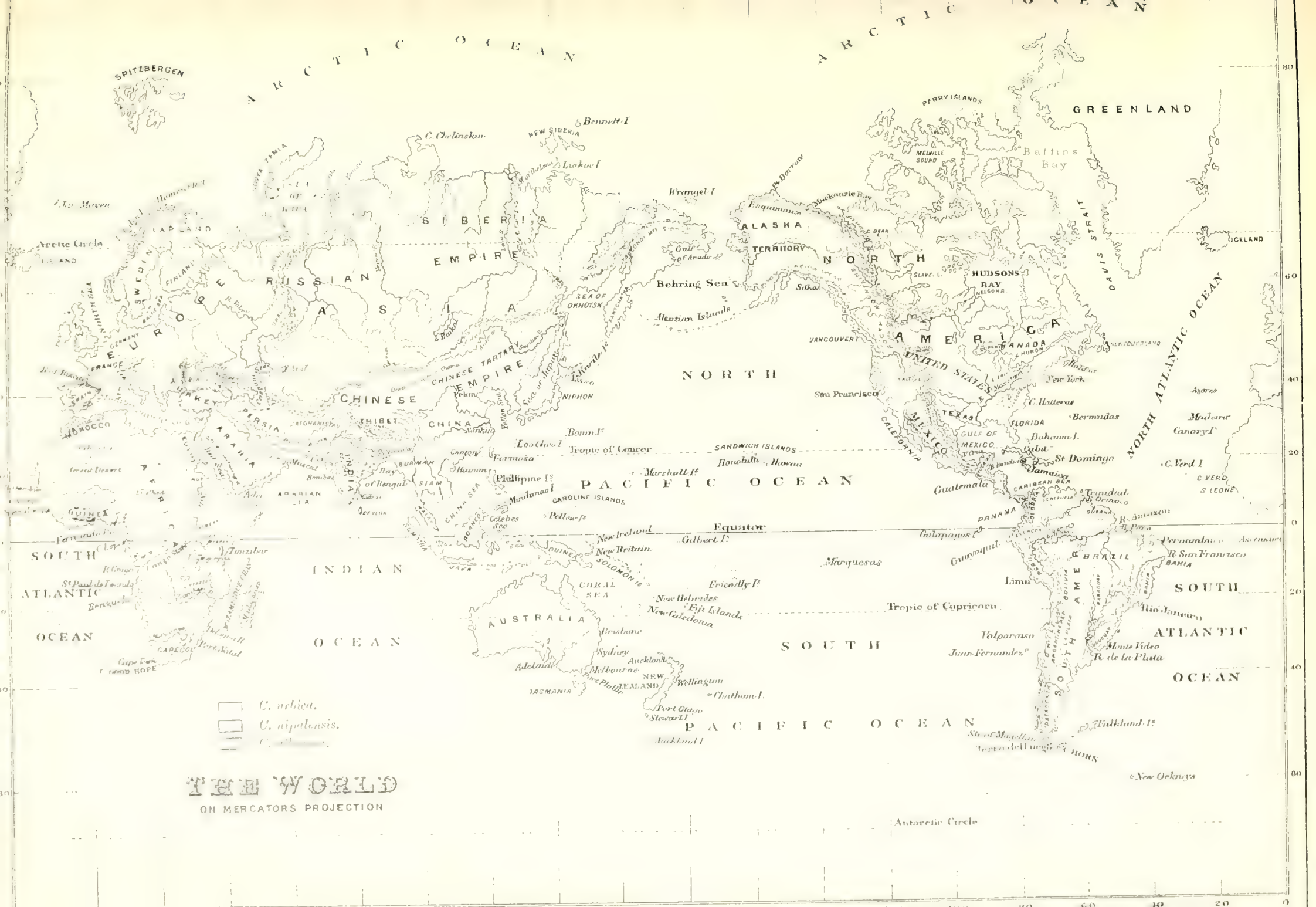
THE GENUS CHELIDON.

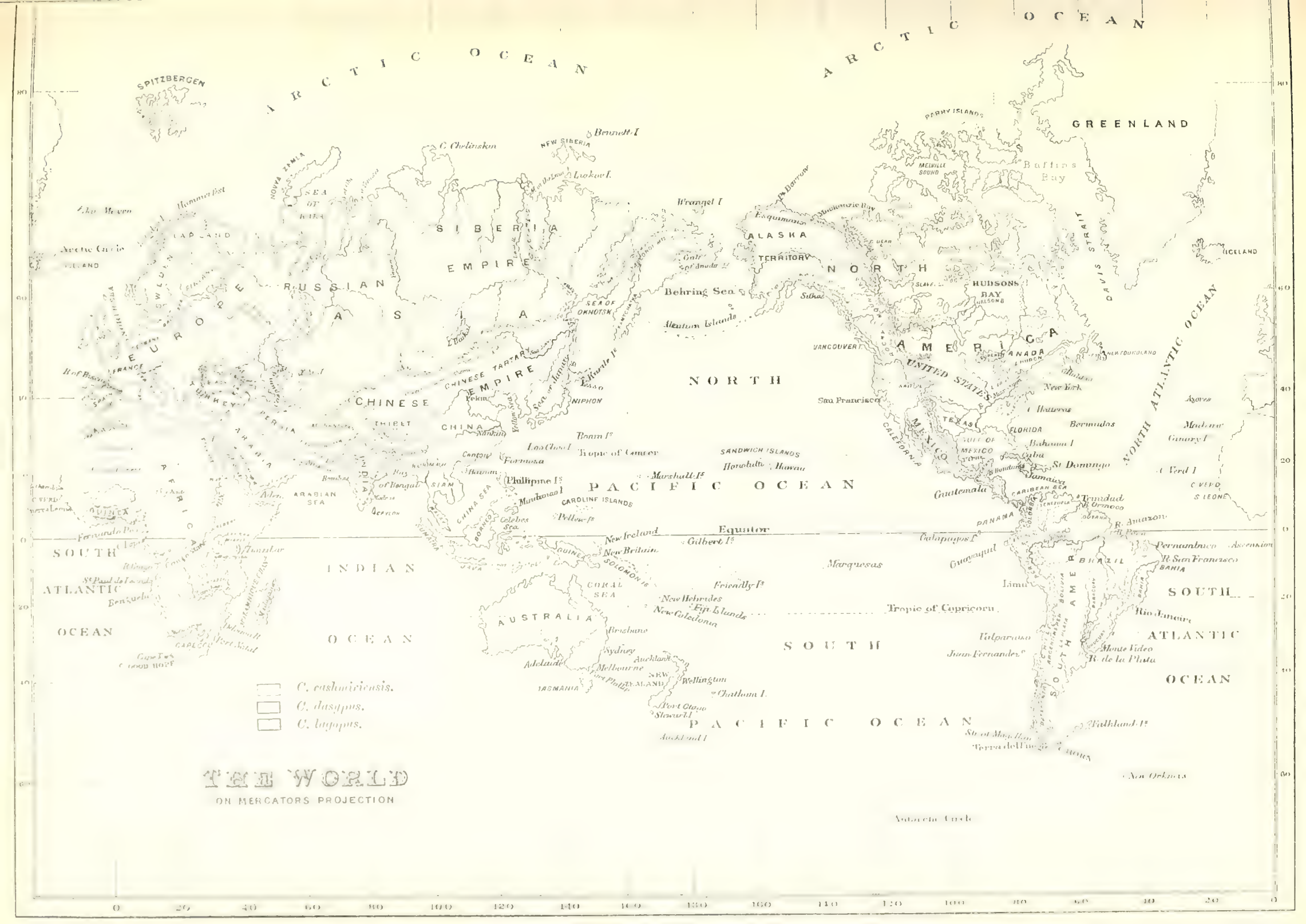
V Guest.

† Wanderer.

Rarely
Generally } nesting.
In colonies




ARCTIC OCEAN
SPITZBERGEN
GREENLAND
PERRY ISLANDS
MELVILLE SOUND
Baffins Bay
DAVIS STRAIT
ICELAND
NORTH ATLANTIC OCEAN
NEW SIBERIA
Bennett I
C. Chelinskoi
Lakoi I
Wrangel I
Esquimaux
Blackwater Bay
ALASKA
TERRITORY
Behring Sea
Aleutian Islands
SEA OF OKHOTSK
Gulf of Anadir
SIBERIA
RUSSIAN EMPIRE
EUROPEAN RUSSIA
ASIA
LAPLAND
SWEDEN
FINLAND
Archangel
Arctic Circle
NORTH AMERICA
HUDSONS BAY
NELSON R.
Sitka
VANCOUVER I
CANADA
NEW FOUNDLAND
UNITED STATES
San Francisco
New York
Boston
C. Hatteras
Bermudas
Azores
Madeira
Canary I
TEXAS
FLORIDA
GULF OF MEXICO
MEXICO
CALIFORNIA
Bahama I.
Cuba
St Domingo
Jamaica
C. Verd I
C. VERD
S. LEONE
Guatemala
CARIBBEAN SEA
Trinidad
Orinoco
PANAMA
COLOMBIA
Galapagos I
Guayaquil
Marquesas
Lima
R. Amazon
Pernambuco
Ascension
R. San Francisco
BAHIA
BRAZIL
SOUTH AMERICA
Rio Janeiro
Valparaiso
Juan Fernandez
Monte Video
R. de la Plata
SOUTH ATLANTIC OCEAN
Falkland Is
Strait of Magellan
Terra del Fuego
CAPE HORN
New Orkneys
NORTH PACIFIC OCEAN
CHINESE EMPIRE
CHINESE TARTAR EMPIRE
Pekin
Yellow Sea
Sea of Japan
NIPHON
Loo Choo I
Bonin Is
Formosa
Canton
Hainan
Tropic of Cancer
SANDWICH ISLANDS
Honolulu
Hawaii
Marshall Is
Philippine Is
Manilla
CAROLINE ISLANDS
Pellew Is
Celebes
Sea
CHINA SEA
BORNEO
SUMATRA
JAVA
SIAM
BURMAH
Bay of Bengal
INDIA
Ceylon
ARABIAN SEA
Aden
Muscat
Bombay
PERSIA
ARABIA
AFGHANISTAN
THIBET
CHINA
TURKEY
MOROCCO
Barbary
Grand Desert
GUINEA
Fernando Po
Equator
Gilbert I.
New Ireland
New Britain
SOLOMONS Is
Friendly Is
New Hebrides
Fiji Islands
New Caledonia
CORAL SEA
AUSTRALIA
Brisbane
Sydney
Auckland
Adelaide
Melbourne
Port Phillip
NEW ZEALAND
Wellington
Chatham I.
Port Otago
Stewart I
TASMANIA
Tropic of Capricorn
INDIAN OCEAN
SOUTH ATLANTIC OCEAN
Zanzibar
Mozambique
St Paul de Loando
Benguela
Cape Town
CAPE OF GOOD HOPE
Port Natal
CAPE COLONY
Antarctic Circle
C. arctica.
C. nipalensis.
THE WORLD
ON MERCATORS PROJECTION


ARCTIC OCEAN
SPITZBERGEN
GREENLAND
PARRY ISLANDS
MELVILLE SOUND
Baffins Bay
ICELAND
NOVA ZEMLA
SEA OF KARA
SIBERIA
NEW SIBERIA
Wrangel I
Behring Sea
ALASKA
TERRITORY
NORTH AMERICA
HUDSONS BAY
DAVIS STRAIT
NORTH ATLANTIC OCEAN
EUROPEAN RUSSIA
RUSSIAN EMPIRE
SEA OF OKHOTSK
Aleutian Islands
VANCOUVER I
CANADA
UNITED STATES
San Francisco
New York
Bermudas
Azores
Madeira
Canary I
FLORIDA
Bahama I
Cuba
St Domingo
MEXICO
TEXAS
GULF OF MEXICO
CALIFORNIA
Guatemala
CARIBBEAN SEA
Trinidad
PANAMA
Galapagos I
Guayaquil
Lima
Valparaiso
Juan Fernandez
BRAZIL
Pernambuco
Ascension
BAHIA
SOUTH ATLANTIC OCEAN
Rio Janeiro
Monte Video
R. de la Plata
Falkland Is
Cape Horn
Terra del Fuego
Str of Magellan
CHINESE EMPIRE
CHINA
TURKEY
PERSIA
ARABIA
THIBET
Pekin
Yellow Sea
Sea of Japan
NIPHON
Lew Chew I
Bonin Is
Tropic of Cancer
SANDWICH ISLANDS
Honolulu
Hawaii
Marshall Is
Formosa
Canton
Hainan
Manilla
Philippine Is
Mindoro I
CAROLINE ISLANDS
Pellew Is
SIAM
CHINA SEA
BORNEO
Celebes Sea
Bay of Bengal
ARABIAN SEA
Aden
Ceylon
Bombay
Equator
New Ireland
New Britain
SOLOMON Is
Gilbert Is
Marquesas
Friendly Is
New Hebrides
Fiji Islands
New Caledonia
Tropic of Capricorn
CORAL SEA
AUSTRALIA
Brisbane
Sydney
Adelaide
Melbourne
Auckland
NEW ZEALAND
Wellington
Chatham I
Port Otago
Stewart I
Auckland I
TASMANIA
INDIAN OCEAN
SOUTH ATLANTIC OCEAN
SOUTH PACIFIC OCEAN
Cape Town
CAPE OF GOOD HOPE
St Paul de Loando
Benguela
Fernando Po
Ascension
C VERD Is
S LEONE
Madeira
C. cashmiriensis.
C. dasypus.
C. lagopus.
THE WORLD
ON MERCATORS PROJECTION
0 20 40 60 80 100 120 140 160 180 160 140 120 100 80 60 40 20 0

Genus II. COTILE.

	Type.
Clivicola, T. Forster, Syn. Cat. Brit. B. p. 55 (1817)	*C. riparia.*
Cotile, Boie, Isis, 1822, p. 550	*C. riparia.*

Range. Breeding in the northern parts of both the Old and New Worlds. The migratory species wintering in South America, as well as in India and Africa, where there are also resident species.

The differences in nesting-habits and the colour of the eggs between the Sand-Martins and the Rock-Martins, which we have included under the one heading of *Cotile*, appear to us, on further consideration, to deserve generic distinction. The Common Sand-Martin (*Cotile riparia*), with its allies *C. diluta* and *C. shelleyi*, has a little tuft of feathers at the base of the hinder tarsus, showing an affinity to the House-Martins (*Chelidon*). *C. congica*, on the other hand, has no tarsal tuft of feathers, but retains the band on the fore neck, which makes it an intermediate species between the section containing *Cotile riparia* and *C. shelleyi*, and the little *C. sinensis* and its African allies, which have no throat-band. To the genus *Cotile* we shall refer all the Bank-Martins, which tunnel holes for their nests and lay white eggs, while to the genus *Biblis* will be referred the Rock-Martins, which lay spotted eggs, like the Swallows, and have also the Swallow-like character of a spotted tail. For those ornithologists who adopt the name *Clivicola* the following species will have to be included:—*Clivicola riparia*, *C. diluta*, *C. shelleyi*, *C. cincta*, *C. congica*, *C. paludicola*, *C. minor*, *C. cowani*, and *C. sinensis*.

Clavis specierum.

a. Fascicula plumosa ad finem tarsi postici posita: torques pectoralis brunnea.
  a'. Major: alâ 4·25–4·35 poll.
    a''. Torques pectoralis obvia, saturatè brunnea . . . . . 1. *riparia*, p. 13.
    b''. Torques pectoralis vix obvia, pallidè brunnea . . . . . 2. *diluta*, p. 63.
  b'. Minor: alâ 3·55 poll. . . . . 3. *shelleyi*, p. 65.
b. Fascicula plumosa ad finem tarsi postici nulla.
  c'. Torques pectoralis brunnea.
    a''. Major: subalaribus albis: alâ 5·0 poll. . . . . 4. *cincta*, p. 67.
    b''. Minor: subalaribus brunneis . . . . . 5. *congica*, p. 71.
  d'. Torques pectoralis nulla . . . . . 6. *paludicola*, p. 73.
    7. *minor*, p. 77.
    8. *cowani*, p. 79.
    9. *sinensis*, p. 81.



C. W. W. del

Mintern Bros. imp

COTILE RIPARIA (*L.*).

SAND-MARTIN.

L'Hirondelle de rivage, Briss. Orn. ii. p. 506 (1760); Daubent. Pl. Enl. vii. pl. 543. fig. 2.

Hirundo riparia, Linn. Syst. Nat. i. p. 344 (1766); Pall. Zoogr. Rosso-Asiat. i. p. 535 (1811); Wilson, Amer. Orn. v. p. 46, pl. 38. fig. 4 (1812); Temm. Man. d'Orn. i. p. 429 (1815); Roux, Orn. Provenç. pl. 143 (1825); Audub. B. Amer. pl. 385 (c. 1826); Werner, Atlas, Chelidones, pl. 3 (1827); Swains. Faun. Bor.-Amer., Birds, p. 383 (1831); Ménétr. Cat. rais. Cauc. p. 45 (1832); Naum. Vög. Deutschl. vi. p. 100, Taf. 146. figs. 3, 4 (1833); Gould, B. Eur. ii. pl. 58 (c. 1837); Audub. Orn. Biogr. iv. p. 584 (1838); id. B. Amer. 8vo, i. p. 187, pl. 7. fig. 3 (1840); Macgill. Hist. Brit. B. iii. p. 595 (1840); Nordm. in Démid. Voy. Russ. Mérid. iii. p. 400 (1840); Hewits. Eggs Brit. B. i. p. 218, pl. 57. fig. 3 (1846); Thomps. Nat. Hist. Ireland, i. p. 400 (1849); Blyth, Cat. B. Mus. As. Soc. p. 199 (1849); Lembeye, Aves Cuba, p. 47, pl. 7. fig. 3 (1850); Midd. Sibir. Reis., Zool. p. 189 (1851); Kjærb. Danm. Fugle, pl. 14. fig. 6 (1852); Schl. Vog. Nederl. pl. 59 (1854); Sundev. Sv. Fogl. pl. 17. fig. 7 (1856–72); Schrenck, Reis. Amurl. p. 389 (1859); Linderm. Vög. Griechenl. p. 118 (1860); Schl. Dier. Nederl. Vogels, pl. 6. figs. 7, 7*a* (1861); Wright, Ibis, 1864, p. 57; Stevens. B. Norf. i. p. 338 (1866); Borggr. Vogelf. Norddeutschl. p. 100 (1869); R. Gray, B. W. Scotl. p. 209 (1871); Harting, Handb. Brit. B. p. 35 (1872); Maynard, B. East. N. Am. p. 75 (1874); Saxby, B. Shetl. p. 147 (1874); Fallon, Ois. Belg. p. 125 (1875); Lawr. Pr. U. S. Nat. Mus. i. p. 450 (1878); Seebohm, Ibis, 1882, p. 372; id. Brit. B. iii. p. 184, pl. 17 (1883); Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 83; Gätke, Vogelw. Helgol. p. 439 (1891); Reiser, Vogels. Landesm. Sarajevo, p. 24 (1891).

Sand-Martin, Lath. Gen. Syn. ii. pt. 2, p. 568 (1783).

Hirundo cinerea, Vieill. N. Dict. d'Hist. Nat. xiv. p. 526 (1817).

Clivicola europæa, T. Forster, Syn. Cat. Brit. B. p. 58 (1817).

Cotile riparia, Boie, Isis, 1822, p. 550; Selby, Brit. B. p. 125, pl. 42. fig. 3 (1833); Gray, Hand-l. B. i. p. 73, no. 864 (1869); Wharton, Ibis, 1879, p. 451; Coues, Bull. Nuttall Club, 1880, p. 96; Hume, Str. F. 1880, p. 246; Ayres, Ibis, 1880, p. 260; A. & E. Newt. Handb. Jamaica, 1881, p. 107; C. Swinh. Ibis, 1882, p. 101; Seebohm, t. c. p. 210; Dixon, t. c. p. 561; Coues, Check-list, p. 43 (1882); Oates, B. Brit. Burm. i. p. 310 (1883); B. O. U. List Brit. B. p. 44 (1883); Seebohm, Ibis, 1883, p. 22; Irby, t. c. p. 83; Tristr. Faun. & Flor. Palest. p. 62

(1884); Blakist. Amended List B. Japan, p. 39 (1884); Eagle Clarke, Ibis, 1884, p. 142; Sharpe, ed. Layard's B. S. Afr. p. 839 (1884); id. Cat. B. Brit. Mus. x. p. 96 (1885); Zarudn. Ois. Transcasp. p. 82 (1885); Whitehead, Ibis, 1885, p. 27; Salvin, t. c. p. 206; Drew, Auk, ii. p. 15 (1885); Murdoch, t. c. p. 63; Agersb. t. c. p. 279; Sharpe, Ibis, 1886, p. 485; Reichen. J. f. O. 1887, p. 62; Salvad. Elenc. Ucc. Ital. p. 84 (1887); Tait, Ibis, 1887, p. 191; Styan, t. c. p. 227; Scully, J. A. S. Beng. lvi. p. 83 (1887); Salvin, Ibis, 1888, p. 257; Chapm. t. c. p. 444; Pleske, Mém. Acad. Imp. St. Pétersb. (7) xxxvi. p. 41 (1888); St. John, Ibis, 1889, p. 155; Lilford, t. c. p. 329; Eagle Clarke, t. c. p. 542; Tristr. Cat. Coll. p. 203 (1889); Saunders, Man. Brit. B. p. 159 (1889); Oates, Faun. Brit. Ind., Birds, ii. p. 272 (1890); Meade-Waldo, Ibis, 1890, p. 429; Saunders, Ibis, 1891, p. 169; Sharpe, Sci. Results Second Yark. Miss., Aves, p. 106 (1891); Evans, Ibis, 1891, p. 61; Buckley & Harvie-Brown, Vertebr. Faun. Orkney Isl. p. 114 (1891); Seebohm, Ibis, 1892, p. 19; Frivaldsky, Av. Hung. p. 72 (1891); D'Urban & Mathew, B. Devon, p. 59 (1892).

Cotyle riparia, Boie, Isis, 1826, p. 971; Brehm, Vög. Deutschl. p. 143 (1831); Bp. Comp. List B. Eur. & N. Amer. p. 9 (1838); Keys. u. Blas. Wirb. Eur. p. lxi (1840); Rüpp. Syst. Uebers. p. 22 (1845); Gray, Gen. B. i. p. 60 (1845); id. Cat. Fissir. Brit. Mus. p. 29 (1848); Bp. Consp. i. p. 342 (1850); Brewer, N.-Amer. Ool. p. 105, pl. 4. fig. 49 (1850); Scl. Contr. Orn. 1852, p. 124; Horsf. & Moore, Cat. B. E.I. Co. Mus. i. p. 95 (1854); Cassin, B. Calif. p. 247 (1850); Heugl. Syst. Uebers. p. 17 (1856); Jaub. et Barth.-Lapomm. Rich. Orn. p. 313 (1859); Salvin, Ibis, 1859, p. 302; Tristr. t. c. p. 434; Baird, B. N. Amer. p. 313 (1860); Gould, B. Gt. Brit. ii. pls. 7, 8 (1862–73); Jerd. B. Ind. i. p. 163 (1862); Homeyer, J. f. O. 1862, p. 254; Gray, Cat. Brit. B. p. 34 (1863); March, Proc. Philad. Acad. 1863, p. 295; Newton in Baring-Gould's Iceland, p. 408 (1863); Baird, Review Amer. B. p. 319 (1864); More, Ibis, 1865, p. 139; Coues, t. c. p. 159; Dresser, t. c. pp. 313, 479; Filippi, Viagg. Pers. p. 346 (1865); Bettoni, Ucc. Nidif. Lomb. tav. 53 (1865–70); Baird, Ibis, 1867, pp. 275, 286, 289; Tristr. t. c. p. 363; Drake, t. c. p. 425; Degl. et Gerbe, Orn. Eur. i. p. 596 (1867); Loche, Expl. Sci. Algér., Ois. ii. p. 70 (1867); Brown, Ibis, 1868, p. 427; Heugl. Orn. N.O.-Afr. i. p. 165 (1869); Doderl. Avif. Sicil. p. 146 (1869); Droste, Vogelw. Bork. p. 88 (1869); Finsch & Hartl. Vög. Ostafr. p. 145 (1870); Sharpe, P. Z. S. 1870, p. 296; Cooper, B. Calif. p. 110 (1870); Fritsch, Vög. Eur. pl. xxiv. figs. 1, 2 (1870); Pelz. Orn. Bras. pp. 18, 402 (1871); Salvad. Faun. Ital., Ucc. p. 54 (1871); Swinh. P. Z. S. 1871, p. 346; Saunders, Ibis, 1871, p. 205; Jerd. t. c. p. 353; Coues, Key N.-Amer. B. p. 114 (1872); Dybowski, J. f. O. 1872, p. 353, 1874, p. 334; Brooke, Ibis, 1873, p. 237; Severtz. Turkest. Jevotn. p. 67 (1873); Hume, Str. F. 1873, p. 164; Sclater & Salvin, Nomencl. Av. Neotr. p. 14 (1873); Antin. & Salvad. Viagg. Bogos, p. 72 (1873); Coues, B. N.-West, p. 89 (1874); Baird, Brewer, & Ridgw. Hist. N. Amer. B. p. 353, pl. 16. fig. 4 (1874); Dresser, B. Eur. iii. p. 505, pl. 163 (1874); Harting, Summer Migr. p. 187 (1875); Butler, Str. F. 1875, p. 452; Hume, t. c. p. 452;

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C. minor: alâ 4·25–4·35 poll.: fasciculâ parvâ ad finem tarsi posticam positâ: torque pectorali brunneâ.

Hab. per regiones Palæarcticam et Nearcticam ferè totas æstivans, in regionibus Indicâ, Æthiopicâ, et Neotropicâ hibernans.

Adult male. General colour above dark earthy brown, a little lighter on the lower back, rump, and upper tail-coverts, the feathers of which have more or less distinctly indicated margins of paler brown; wing-coverts darker brown than the back, with indistinct margins of lighter brown; bastard-wing, primary-coverts, and quills very dark brown, the innermost secondaries paler and more like the back; tail-feathers brown, with a narrow whitish edging towards the tip of the inner web of all but the centre feathers; lores dusky blackish, with a slight hoary shade above them, remains of hoary edges to the feathers being seen on the basal frontal feathers; feathers below the eye and ear-coverts brown; cheeks, throat, and under surface of body pure white, the throat separated from the chest by a very broad and distinct collar of dark brown, this brown colour also extending down the sides of the body, and occupying the centre of the breast in the shape of a few feathers which have the inner webs dark brown; thighs brown; axillaries and under wing-coverts dark brown, those near the edge of the wing broadly edged with whitish; quills dusky brown below, lighter along the inner webs: "bill blackish brown; legs dark brown; iris dark hazel" (*Dresser*). Total length 4·8 inches, culmen 0·3, wing 4·25, tail 2·1, tarsus 0·45.

Adult female. Similar in plumage to the male. Total length 5 inches, culmen 0·35, wing 4·2, tail 1·9, tarsus 0·4.

Young. Lighter brown than the adult, and distinguished by the sandy-rufous or ashy-whitish edgings to the feathers of the back and wings; the throat is also slightly tinged with pale rufous; the throat-band is strongly pronounced, but has pale edges to the feathers.

These light margins to the feathers seem to disappear somewhat before the young birds leave this country, specimens killed in August having the pale edgings much broader and more strongly characterized than a young bird killed at the end of September.

Like other Swallows, the Sand-Martin moults while in its winter-quarters. Mr. Gurney has presented to the British Museum a specimen shot by Mr. T. Ayres in the Transvaal on the 28th of February. The body-plumage seems to have been completely moulted, but some of the quills and tail-feathers are not entirely renewed. From this specimen it appears that in the fresh-moulted bird the inner secondaries are distinctly edged with white, and remains of these white edges are seen in all newly-arrived birds in Europe.

Dr. Stejneger observes:—"The Kamtschatkan specimens collected by me agree very well with birds from Western Europe, although being a shade darker. They also agree with them in the extent of the furcation of the tail, the distance between the tips of the longest and shortest tail-feathers being as great as the length of the hind toe with claw. In all the American specimens examined by me (16), the same distance is hardly longer than the hind toe without claw, this being the case even in specimens from Alaska. It will, therefore, be well not to unite the two races, the American form being *Clivicola riparia cinerea* (Vieill.)."

In view of the above observations by this careful observer, we have gone over the series of Sand-Martins in the British Museum, and we find that there is considerable variation in the depth of colour and in the amount of furcation in the tail. These characters are not even constant in the American series, and the latter can be matched in every respect by examples from the Old World. We cannot, therefore, uphold the separation of the Palæarctic and Nearctic Sand-Martins, even as subspecies.

Hab. Breeding in the northern parts of the Old and New Worlds, wintering in more southern localities in the Indian, Ethiopian, and Neotropical Regions.

The Sand-Martin, or Bank-Martin as it is sometimes called, from its habit of nesting in sandbanks, is a common species in nearly every part of Europe, becoming rarer in the northern parts of the continent. It has been found throughout the whole extent of the British Islands, and is a regular summer visitor all over Ireland, arriving at the end of March or early in April, and leaving in the early part of September. As with the House-Martin, later instances of its stay are frequently recorded, and Mr. Howard Saunders, in his 'Manual,' refers to an exceptional record of the bird's occurrence in county Limerick as late as the 30th of November in 1859.

Mr. Robert Gray writes:—"The Sand-Martin is widely distributed throughout Scotland, extending to all the remoter islands. It is a regular summer visitant to Lewis, Harris, and North Uist, breeding in sandbanks on the western sides of these islands. It also inhabits South Uist and Barra, but I have not seen it on Benbecula, which probably does not furnish suitable banks for a bird of its mining habits."

In the Orkney Islands, according to Messrs. Buckley and Harvie-Brown, it was formerly a common summer resident, and bred in large numbers, but is now much less numerous, so that it can only be considered an irregular visitant, being more plentiful in some years than in others. It has been recorded by Mr. H. A. Evans as breeding near Lerwick in the Shetland Islands.

So far as is at present known, the Sand-Martin has never been noticed either in the Færoe Islands or in Iceland. Mr. Dresser, in his 'Birds of Europe,' gives a full account of its distribution in Northern Europe, and publishes the following notes from Prof. Robert Collett, of Christiania, and other observers, writing as follows:—"'It breeds from Southern Norway up to the Russian frontier, north of the Polar Circle, and along the west coast it is one of the commonest species. It breeds up in the birch-region in the fells both on the Dovre and in Ronderne.' In a further note Prof. Collett tells me that it arrives in Norway about the middle of May, and leaves again early in September. In the Gudbrandsdal and Osterdal he found them breeding in the roofs of houses, which are there frequently made of turf, into which the Martins had burrowed, though many other more suitable localities for the purpose of nidification were close at hand. Pastor Sommerfelt says that it is 'not common on the Varanger fiord, but breeds in several localities, as, for instance, at Seida, on the Tana river at Nuorgan, at Polmak, and at Oxevandet;' and he thinks that of latter years it has increased in numbers. Nilsson says that it is numerous throughout Sweden up into the Polar Circle, arriving rather later

than the Common Swallow, about the end of April, and leaving in August or early in September. In Finland it occurs in most parts of the country, being met with most frequently on the banks of the larger rivers; but I seldom observed it in the southern portions of the country."

Dr. Pleske, in his work on the Kola Peninsula, says that in Russian Lapland the Sand-Martin has been found by Böthlink and Von Middendorff near Kola, and Mela noticed it near Ponoj. Dr. Pleske himself saw a breeding-colony at one place on the Kola river, and he gives a long list of places where the bird has been observed in Finnish and Swedish Lapland.

The Sand-Martin appears to be found throughout Russia, and is a very common summer visitor to Archangel; and Messrs. Seebohm and Harvie-Brown, in their account of the birds of the Lower Petchora, write:—"We first saw the Sand-Martin on the day we left Ust Zylma (10th June) between that place and Habariki. Afterwards we met with the species in small numbers at Gorodok and at Kuya, and obtained specimens. Nowhere on the Petchora did we find the Sand-Martins so abundant as they are in summer on the islands of the Dvina at Archangel, where nearly every suitable bank holds a large colony."

Mr. Dresser adds a note:—"Meves met with it at Schlüsselburg, Novaja Ladoga, Onega, Archangel, &c., everywhere common; and Sabanäeff informs me that it is generally distributed throughout Central Russia in suitable localities, and, along the Ural range, it is found at least up to 58° N. lat., and even higher on the Kama; but on the south-eastern slopes it is rarer. In Poland, the Baltic Provinces, and Germany it is common, but, according to Borggreve, it is not found high up in the mountains."

Throughout Central Europe and France the Sand-Martin is found in its own peculiar habitats. MM. Jaubert and Barthélemy-Lapommeraye record it as a spring and autumn migrant in France, a small number breeding every year in the banks of the Rhone and Durance. It is common at Santander, as noticed by Colonel Irby, and breeds there, and it was observed on the Upper Ariége by Mr. Eagle Clarke at the end of May. Mr. Howard Saunders found the species nesting on the banks of the Guadalquivir at the end of May, and Colonel Irby gives the following account of the Sand-Martin at Gibraltar:—"I have found them at Ras Doura in small numbers, and have no doubt they were nesting in the vicinity; they nest in the neighbourhood of Seville, but near Gibraltar are only met with on passage. The first seen by me was on the 24th March, 1870, 22nd March, 1871, 24th Feb., 1872, 28th Feb., 1874; they were seen passing as late as the 24th of April. On the 13th May I saw, in the evening, over some marshes near Vejer, a flight of Sand-Martins numbering many hundreds, I might say thousands. I noticed them on the 14th of October on their southward journey."

The species would also appear to winter in Spain to a certain extent, as Mr. Chapman mentions in his paper called "Winter" notes:—"On December 28th I observed a few Sand-Martins hawking in the sun at Vejer-de-la-Frontera." Mr. Tait observes:—"Is not

so common as the House-Martin and Swallow, and is oftener found in the north than in the south of Portugal. I have met with it in various places in the province of Minho, and on the river of that name it is very abundant, burrowing in the sandy banks of the islands worn away by the current. A colony is established at the roadside near the favourite shrine of Bom Jesus do Monte, near Braga, and I have seen another at Magdalena, near Oporto. Some were seen by me April 5th, 1884, between Beja and Mertola, in the Alemtejo, on the banks of the river Torges, and I saw the holes in the bank where they nested."

Major Alexander von Homeyer met with the species in the Balearic Isles, and found about twenty pairs breeding near Alcudie.

In Morocco the Sand-Martin is migratory, according to M. Favier, and the least abundant of the Swallows about Tangier, arriving to cross the Straits in March and April, returning in October to disappear for the winter. In Algeria it breeds near Chérif, according to Loche, but is not common. Mr. Dixon, in his paper on the Birds of the Province of Constantine, writes:—"We observed the Sand-Martin both at Philippeville and Constantine, and also near the sandy banks of the Oued Kantara some few miles before it reaches the oasis bearing that name."

Canon Tristram's Algerian note is as follows:—"A few at El Aghouat in November. They did not appear to winter in the Sahara, and can only, I imagine, be stragglers there at any time, as the Weds and oases afford them but few conveniences for nidification."

Mr. Salvin observed the species on one or two occasions in the Eastern Atlas, and he noticed it on the road between Tunis and Kef during the third week in March, but never saw others subsequently. In Tunis Dr. Koenig considers the Sand-Martin to be an irregular migrant.

Mr. Godman procured specimens near Orotava in Teneriffe on the 21st of April, and Mr. Meade-Waldo says that the species was very numerous in that island when he visited the Canaries.

To return to Europe, the Sand-Martin appears to be found throughout Southern Europe and the Mediterranean basin in suitable localities. Thus Mr. Howard Saunders, in his paper on the birds of Switzerland, says that he noticed them about April 12th breeding in banks near Bienne and elsewhere in the flat country, but it was rare at Vevey.

In Southern Austria Von Tschusi says that it breeds in suitable places, being most common on the banks of the Danube below Presburg. In Hungary Professor Frivaldsky states that it arrives a little later than the House-Martin, and breeds in suitable localities, leaving in September.

Professor Giglioli sends us the following note:—"*Cotile riparia* breeds in large colonies in all suitable localities in all Northern Italy (Piedmont, Lombardy, Veneto), also in Tuscany (province of Grosseto in the Maremma). It appears to be less frequent, probably from the want of suitable localities, further south in the Italian Peninsula; but there are large breeding-colonies in Sicily (Lentina, Caltanissettà, and Palermo), and

also in Sardinia. On account of its special mode of nesting, the Sand-Martin is always very localized."

In Italy it is a summer visitor, as also in Sardinia, Corsica, and Sicily. In Sicily it has been said by Benoit to winter near Catania, but neither Count Salvadori nor Dr. Giglioli credit this statement, and Prof. Doderlein denies it altogether; though the latter believes that some individuals winter in the island of Pantellaria, which statement Dr. Giglioli considers to require confirmation. In Italy it breeds twice a year. In Corsica Mr. C. Bygrave Wharton found the species fairly numerous after the end of March; and Mr. John Whitehead writes as follows:—"In 1883 first seen on the 11th of April, in 1884 on the 8th of April. Never seen in numbers. Though the river-banks, in places, were suitable, I never saw any sign of a nest, or of a bird after the passage was over." Mr. Basil Brooke says that in Sardinia it arrives early in March and is common. Mr. C. Wright states that in Malta it is common in spring and autumn. In Greece, according to Mühle and Lindermayer, it is a summer resident, and the latter says that colonies of the Sand-Martin breed in the banks of the Alpheus and Eurotas, migrating south very early in the autumn, before *Chelidon urbica*. Lord Lilford says that it was uncommon in Epirus. Dr. Krüper informed Mr. Dresser that he had found the Sand-Martin breeding in Macedonia in the banks of a brook below Mount Olympus. Professor Brusina states that he has not yet found the Sand-Martin in the interior of Croatia, but he has received a specimen from Fort Mamula in the Bay of Cattaro, shot on the 28th of June. He has examples also from Montenegro. Mr. Otto Reiser has met with the species near Sarajevo.

In Asia Minor, Mr. Danford observes, it was not seen in the mountains, but was found by him abundantly near Kaisariyeh. Lord Lilford writes:—"I do not find a specimen of this bird from Cyprus in my collections, but have a note of it as observed both by Guillemard and myself, and it is included in Unger and Kotschy's list. It was certainly not common in any part of Cyprus visited by me in April and May."

Canon Tristram, in his 'Fauna and Flora of Palestine,' writes as follows:—"Does not return to the Holy Land till the end of March, and then in small colonies, there being very few localities suited to its habits." Von Nordmann says that in Southern Russia the Sand-Martin is widely distributed and breeds in vast numbers in the Steppes of Bessarabia. According to Mr. Henke, it is a very common summer visitor to Astrakan; and in the Caucasus, Dr. Radde informs us, it inhabits the lowlands, breeding up to 6300 feet, and arriving about the 6th of March. Dr. Finsch states that it was the most common bird at Samarova on the Irtish river; and Mr. Seebohm, in his paper on the Birds of Siberia, writes as follows:—"Arrived on the Arctic Circle on the 9th June. Both on the Ob and the Yen-e-say, large colonies of these birds were frequent. I did not see any further north than lat. 67°."

According to Dr. Severtzoff, the Sand-Martin seldom visits the north-eastern portions of Turkestan, and was not often seen by him in the south-eastern districts, but elsewhere it was common and bred. The late Mr. Russow found it breeding at Tschinas. Dr. Stoliczka obtained a specimen at Panja, in Eastern Turkestan, on the 17th of April, 1874.

Dr. W. T. Blanford gives the following note:—"Bank-Martins are rare in Southern Persia, and the only specimen obtained was one shot by Major St. John on his road from Tehran to Bushire. De Filippi, however, found them abundant at Miana in Northern Persia, between Tabriz and Kazvin."

Mr. W. D. Cumming has met with the species at Fao in the Persian Gulf, and says that excepting in December and January the species has been seen during the whole course of the year. Colonel Swinhoe notes its arrival at Candahar at the latter part of March, but not in large numbers. Sir Oliver St. John states that it is rare in Kelat. In India it appears to be a very rare winter visitant. Jerdon observes:—"I have found the Sand-Martin somewhat rare in India. I got specimens at Jaulna and saw it occasionally at Mhow and Saugor, and also in two or three localities on the Ganges, but very few, generally one or two together, in company with the Common Swallow, and always near water."

The Hume Collection contains a specimen from Sindh, procured on the 14th of January, 1877; and Dr. Blanford writes:—"I have obtained three specimens in Sindh, two shot by myself on the Manchhar Lake, the third near Rohri."

In Gujerat Colonel Butler speaks of it as only a rare visitant in the cold weather.

In Cachar Mr. Inglis states that it is extremely common, and he shot a specimen at Dilkusha as late as the 15th of April. Mr. Hume, in his list of the birds of Manipur, writes:—"I first met with this species at the Logtak Lake, where, on the 19th of March, I noticed a huge mixed flock of this and *Cotile sinensis* hawking over a meadow, and shot a few of each to make sure. Again, on the evening of the 8th of May, a large flock of the present species only appeared on the Machi ridge where I was encamped, and hawked about until dusk, flying extremely fast and high, so that I procured a couple with great difficulty. This Machi ridge is about 5300 feet high where the Martins were most abundant, and except for a small pond (which they did not in any way affect or notice) there was no water for miles. Once more I saw a few more hawking at eventide, late in May, about the huge broad moat which surrounds the Raja's Palace at Manipur Town. While, therefore, it is scarcely rare, it is, on the other hand, by no means one of the common birds you meet with every day. I have this species from N.E. Cachar, from Sadiya, and from Dollah, which is near the last-named place. It occurs, but probably as a seasonal visitant only, in many parts of Pegu and the plains portions of Tenasserim, north of Moulmein." Mr. Oates writes:—"A somewhat rare winter visitor to Pegu and Tenasserim, and it probably also occurs in Arrakan. I observed it in the Pegu river on several occasions."

Messrs. Hume and Davison, in their list of the birds of Tenasserim, observe:—"Confined apparently as a seasonal visitant to the tracts between the Salween and Sittang rivers. It was common late in January and early in February over the whole of the level country lying in the Thatone sub-district; but Mr. Davison has not as yet seen it elsewhere in Tenasserim. A few of this species were also observed close to the town of Moulmein at the latter end of May."

Dr. Taczanowski, in his work on the birds of the Eastern Palæarctic Region, sum-

marizes the work of the Russian naturalists in that quarter of the globe, and says that the Sand-Martin is widely spread in Eastern Siberia. Mr. Godlewski noticed it everywhere in small numbers, but in Dauria there are many localities where it is very abundant and breeds. Dr. Middendorff observed the species in the neighbourhood of Oudskoi-Ostrog, but not in such numbers as the Chimney-Swallow.

According to Von Schrenck it is very common on the Amur, nesting on the steep sandy banks of the river and its islands, the banks being generally by no means high and washed by the waters of the stream: the birds were nesting in small companies and never in such numbers as in Europe. Some of the nests were placed so near to the level of the water as to threaten their destruction on the least flood. Przewalski did not find the species on the Ussuri or in the basin of Lake Hanka. Steller and Dr. Dybowski have met with the species in Kamtschatka. On the 1st of September Przewalski saw an enormous company of Sand-Martins going south in the valley of the Chuan-he. In the island of Sakhalin Mr. Nikolski observed the species in restricted numbers in the neighbourhood of Alexandrowka and in the Korsakoff Post. Poljakoff has noticed a number of these Martins in the lower course of the river Tym.

Dr. Taczanowski also included *Cotile sinensis* as occurring in Eastern Siberia; and he based this conclusion on five examples procured by Mr. Janskowski on the Sidemi River, close to the frontier between Ussuri Land and China, not far from Vladiowstock. Mr. Stolzmann has very kindly submitted some of these specimens to us for examination, and we find that they are absolutely *C. riparia*, and not even the pale form of it, which really does somewhat resemble *C. sinensis* in appearance.

General Przewalski's note on the species is as follows:—"Tolerably common in S.E. Mongolia, but is rather scarce about Ordos and Ala-shan, and does not occur at all in Kan-su. It breeds in the former localities in small companies of from three to five pairs, on the sides of rivulets, and sometimes in the hills of the steppe at great distances from the water. On the 6th of June I took a nest with six perfectly fresh eggs, and on the 18th of the same month we found some very young birds. They arrive in spring in S.E. Mongolia at the end of April and leave at the end of August; on the 20th of this month we observed, in the Hoang-ho valley, an enormous flock migrating south."

In Kamtschatka, Dr. Stejneger says, "the Sand-Martin occurs in the vicinity of Petropaulowski, but is not, as it would seem, very common. It has been said to visit the island of Bering occasionally, but I have doubts as to the correctness of the statement, as no specimens seem to have been obtained. It is certain that it was not seen there during my sojourn." Three sets of eggs were obtained in Kamtschatka, the measurements of which are given. "All the eggs were very evenly speckled with minute black dots. These could be washed away completely from the fresh eggs, while a year afterwards they are difficult to remove, if it can be done at all."

Mr. Seebohm says that the Sand-Martin is a summer visitant to Japan, but is nowhere very abundant, according to Messrs. Blakiston and Pryer. His collection contains four examples sent by Captain Blakiston from Yezzo, and two specimens from Yokohama collected by the late Mr. H. Pryer.

In China Swinhoe noticed the species near Pekin in summer, and Mr. F. W. Styan

records it as a summer visitant to the basin of the Lower Yangtze. He says that it is not very common, and he has not yet discovered its breeding-haunts, but he has noticed the birds on the Yangtze in May, June, and July. At Foochow, according to the same observer, it is seen in spring, and five specimens were shot in November.

According to David and Oustalet it is very common in the north of China for the greater part of the year, nesting in colonies. Abbé David likewise states that he met with it in Mongolia. The following note is by the late Consul Swinhoe:—"This pretty little Swallow was very common about the marshes at Takoo, often perching on the ground, apparently to take rest and preen itself. In the plain before Tientsin thousands of this species, in company with large parties of *Hirundo rustica* and *daurica*, swarmed the air during the warm days of September, engaged in catching the numerous flies that haunted the camp. We were delighted to see these active little fly-destroyers occupied so busily in the work of destruction, as we were literally inflicted with a plague of flies, for every tent was blackened towards the top with these small pests." In Kokonoor Mm. Grum-Grzimailo met with the species plentifully.

It must be remarked that the eastern range of the Sand-Martin is by no means clearly understood, and that some of the remarks above quoted may ultimately be found to refer to the pale eastern form which we have called *Cotile diluta*.

In Africa also considerable uncertainty exists as to the winter habitat of the Sand-Martin. Many references to the occurrence of the species in North-eastern Africa doubtless refer to *Cotile shelleyi*, and probably not a few to *Cotile minor*. Thus Canon Tristram says that he has found the Sand-Martin breeding in Egypt in February, and suggests that the species may be double-brooded. Without doubt the species referred to must be *Cotile shelleyi*. From Suez we have received an undoubted example of the true *C. riparia*, and its winter residence in South Africa is certified by three specimens sent by Mr. Ayres from Potchefstroom and now in the British Museum. Dr. Reichenow also informs us that the specimens in the Berlin Museum from Eastern Africa are the true *C. riparia*.

Mr. Ayres writes:—"One morning, very early, I went down to the river with my rod to fish, and sitting quietly near an extensive bed of reeds and rushes, I saw many hundreds of these little Martins leave their roosts among the rushes, all together, just as the sun rose; about a quarter of an hour later many hundreds of *C. paludicola* left the same patch of reeds, or others close by, all together, or nearly so; at this time the two species were not mixed, but at other times of the day they are nearly always together, coursing for insects."

We have only seen one example from any part of West Africa, and this is a specimen in the Tweeddale Collection, collected by M. Laglaize near St. Louis in Senegambia. Mr. Hartert, during his expedition to the Benüe River, saw a Sand-Martin in the far interior, which was probably the present species.

Considering, however, the myriads of this common little bird which must be hatched in northern latitudes every year, it is marvellous that so few specimens are obtained in its winter-quarters, while the routes which they follow are practically unmarked. No doubt one line of flight is along the Nile Valley, as Dr. Reichenow records an example

from Bukoba on the Victoria Nyanza, where Emin Pasha met with it on the 12th of January. The late Dr. Fischer also procured a specimen at Kagehi on the 2nd of January. The specimens from the Transvaal are the true *C. riparia*; but it is by no means clear that the large flocks noticed by Heuglin on their way south were all *C. riparia*, though he gives this species as a migrant in N.E. Africa and Arabia, passing south at the end of August and returning in February. He also says that he obtained it in Bogos Land in September.

In North America the Sand-Martin is as abundant and widely distributed as in the Old World, ranging far north. Sir John Richardson, in the 'Fauna Boreali-Americana,' has the following note:—"The Sand-Martin is remarkable for the extent of its breeding-stations, which embrace the whole continent of N. America. It arrives in Pennsylvania earlier than the other Swallows, or about the third week in March, begins to breed in April, and has commonly two broods in a season. Mr. Hutchins states that it breeds later than any other bird which frequents Severn River, sometimes not laying its eggs until near the end of July; but he observes that it disappears, together with the rest of the Swallow tribe, in the middle of August. Hearne remarks that the Martins, though common in the southern parts of Hudson's Bay, seldom go so far north as Churchill. The whole history of the migratory birds proves that the main object of their wanderings is the obtaining a supply of proper food for themselves and their young. All quarters of the fur-countries abound in the winged insects that Swallows delight to feed upon; but owing to the large bodies of ice which hang upon the shores of Hudson's Bay until the beginning of August, every breeze from the sea which sweeps the neighbouring country, produces a depression of temperature sufficient to chill the insects and drive them to shelter; the supply of food to the Swallow tribe, consequently, in that district is so precarious as to render the rearing of their young difficult and uncertain. In the interior of the country, however, the case is different. When the snow is gone, the earth speedily becomes heated; and while the summer lasts, the temperature of the atmosphere continues higher than the hottest weather that is ever experienced in the insular climate of Britain, fostering incredible multitudes of mosquitoes. We observed thousands of these Sand-Martins fluttering at the entrance of their burrows near the mouth of the Mackenzie, in the 68th parallel, on the 4th July, and it is probable, from the state of the weather, that they had arrived at least a fortnight prior to that date. They are equally numerous in every district of the fur-countries wherein banks suitable for burrowing exist, but it is not likely that they ever rear more than one brood anywhere north of Lake Superior."

The species is said by Audubon to be plentiful on the south shore of Labrador, rarely beginning to breed before June, and laying but once. In the north-west of America it is very much more numerous, and Mr. Nelson gives the following note:—"Along the Arctic sea-coast, as well as the coast of Bering Sea, this is an extremely rare visitant, occurring merely as a straggler during its migration. On the river-courses of the interior, however, it is one of the most abundant, if not the most abundant, species of Swallow. Dall found it nesting in great numbers on the Yukon, and counted over seven hundred Swallows in a sand-bluff near Nuklukhayet; he found from two to six eggs in

the nests which he examined. These eggs were laid upon scanty beds of fine twigs without straw or other lining. Richardson found colonies, numbering thousands, of these birds about the mouth of the Mackenzie River, in lat. 69°, and it is common all along the rivers of Arctic America. A single bird taken by the Point Barrow party, and a few others seen there the last of July and 1st of August, show that this species extends its range to the extreme northern point of the mainland. It arrives at the Yukon mouth from the 20th to the 25th of May, and leaves that region the last of August. There is no record of the Bank-Swallow's presence on the south-east coast of the Territory, though it is to be expected there owing to its wide distribution. It is unknown on the islands of Bering Sea."

Dr. Murdoch observes that the Sand-Martin was first seen on migration at Point Barrow on July 29th, and the last on August 10th. Mr. Macfarlane, in his paper on the birds of Arctic America, writes as follows:—"This species is to be met with in considerable numbers during the season of nidification. It builds its nests in holes in sandy clayey banks on Anderson River. Several birds and eggs were taken, but, not being in much request, their collection was discouraged."

Mr. Ernest Thompson gives the following note on the species in Manitoba:—"Somewhat common summer resident; local in distribution. Pembina: breeding in colonies and along the line to the Rockies (*Coues*); Winnipeg, summer resident, abundant (*Hine*); Portage la Prairie, tolerably common resident, arrive about the 22nd of May, depart about August 23 (*Nash*); abundant in the north-west (*Macoun*); Portage la Prairie, Assiniboine, near Souris' mouth; Yellowquills Ferry (*Thompson*); Shell River, 1885, first seen on April 30, afterwards seen every day, is common all summer, and breeds here (*Calcutt*); Qu'Appelle, summer resident, breeds, arrives about May 10 (*Guernsey*).

"*Sash y win e pesheu* (Martin).—It resorts hither in the beginning of June, harbours about the steep banks of rivers, where it breeds in holes, making a slight nest of straw and feathers, and lays five white eggs. It is the latest breeder of the Hudson's Bay feathered tribes. I have repeatedly found new-laid eggs in the latter end of July, and by the middle of August not one of the Swallow species is to be seen. A few days before their disappearance they collect in numbers to particular ponds nigh Severn Settlement, and fly about along the surface of the water.

"These birds do not breed in colonies here, but excavate their holes in the bank of the Assiniboine River, singly, and some distance apart. They are late in nesting. On the 21st of July I took out a nest. It was quite new, but contained no eggs. I saw the old birds going in and out of the hole the day before, and just previous to my examining it. (*Nash, MSS.*)"

Mr. Thompson has also very kindly communicated to us the accompanying notes on the range of the Sand-Martin throughout Canada:—

"*Distribution in Ontario*:

"*London and vicinity.* Abundant along water. Not nearly so common as formerly *near the city*, on account of the constant persecution of boys. On Erie coast,

south of here, they breed in vast numbers in the clay-cliff overlooking the lake (*W. E. Saunders*).

"*Hyde Park.* Summer resident (*John A. Morden*).

" *Listowel.* Have seen many nesting-places at Port Dover (*W. L. Kells*).

" *Hamilton.* A common summer resident, breeding abundantly in suitable places all over the country. . . . Near Hamilton this species is very abundant (*T. McIlwraith* in ' Birds of Ontario ').

" *Toronto.* This species is abundant throughout the vicinity of Toronto, nesting in all the steep banks of the rivers, creeks, and lake-shores near. I have the following notes for this region :—May 11th, 1885. Bank-Swallow arrived; May 10th, 1888. Bank-Swallow arrived.

" *Ellora.* Summer visitant, rare (*Hon. Charles Clarke*).

"*Bruce Co., central region.* Summer resident, common (*W. A. Schoenan*).

" *Millbrook.* Summer resident, abundant; noted first arrival 15th April, 1885 (*George Sootheran*).

" *Coboconk.* Noted by myself as common there in June 1885.

" *Peterboro'.* Common (*Rev. V. Clementi*).

"*Yarker.* Summer resident, rare (*John G. Ewart*).

" *Kingston.* Very abundant (*Dr. C. K. Clarke*).

" *Distribution in Province of Quebec* :

" *Montreal.* Summer resident, abundant (*W. W. Dunlop*).

" *Co. Quebec and N. to Lake St. John.* Summer resident, abundant (*J. Neilson*).

" *Lake Mistassini.* Common; breeds here: May 10th (*Jos. M. Macoun*).

" *Distribution in Manitoba and North-west* :

" *Carberry.* Very rare about Carberry, on account of absence of nesting facilities, but noted along the Assiniboine River, 18 miles south, as common.

"*Winnipeg and vicinity.* Summer resident, tolerably common (*R. H. Hunter*)."

Professor Elliott Coues procured specimens at Pembina, in Dakota, in June, and observes that the species is one of those of general distribution along the line in summer, breeding in colonies anywhere where the cut banks of the rivers afford suitable sites for the digging of the holes in which the nests are constructed. In South-eastern Dakota it is common, according to Mr. Agersborg, and breeds.

Mr. Belding summarizes the records from California as follows:—" San Bernardino, rare migrant through the valley (*Stephens*); Santa Cruz, common summer resident (*J. Skirm*); not uncommon throughout California (*Newberry*); abundant at Sacramento city (*Heermann*); Contra Costa and Alameda counties, rare summer resident (*Bryant*); Nicasio, March (*Allen*); Malhem Lake, breeding in large numbers on one of the islands (*Henshaw*); Truckee Reservation in May (*Ridgway*)." Dr. Hart Merriam says that, during the Death-Valley Expedition, " Bank-Swallows were seen in two places only by members of the expedition. Mr. Nelson saw a few in company with rough-winged Swallows at the bend of the Colorado, in Nevada, about March 10. Mr. Stevens found it common

at Alvord, in Owens Valley, where they were breeding in the banks along the sloughs, June 26–28."

The species does not appear in Mr. Frank Chapman's list, and no specimen was obtained by Mr. J. K. Lord in British Columbia; but Mr. John Fannin states that it is a summer resident east of the Cascades, but is rare to the west of that range. It is recorded by Mr. Lawrence from Gray's Harbour, in Washington County, and in California it is found in suitable places.

Mr. Townsend did not find it in any of the localities in Northern California visited by him, but in Ventura County, according to Mr. Evermann, it is a summer resident, locally abundant.

Returning to the northern habitat of the Sand-Martin, Mr. Bishop says that it was tolerably common on the Magdalen Islands, breeding on Grindstone. According to Mr. Dwight it is a summer resident on Cape Breton Island, Nova Scotia; and Messrs. Brittain and Cox record it from the Restigouche Valley, in New Brunswick; they also saw a small colony at the mouth of the Kedgwick River. In New England Mr. Maynard says that it is the last of the Swallows to appear, arriving about the middle of May. Mr. Stearns, in his work on 'New England Bird Life,' observes:—"These very plainly coloured Swallows, the least in size of all our species, are abundant summer residents, wherever the requirements of their breeding instinct are fulfilled. Unlike all the rest, the Bank-Swallows have never yielded to modernizing influences, and still persist in excavating holes for themselves in the ground, as they have always done." In Berkshire County, Massachusetts, Mr. Faxon says it is plentiful, breeding in the banks of the Housatonic river. Mr. W. Brewster also states that the Sand-Martin is a common bird near Winchenden, in Massachusetts, and breeds there; and Messrs. Faxon and Allen remark that it is common in the White Mountain region, in New Hampshire, from June to August. It also breeds very frequently in the district of Columbia, according to Mr. Richmond.

Mr. Dutcher, in his paper on the birds of Little Gull Island, New York, observes:—"Although no birds of this species were seen, Mr. C. B. Field said that they had bred abundantly on Great Gull Island earlier in the season, a statement that was well verified by the large number of holes in the sand-banks that overlooked the shores of the island. Mr. Field also said that about as soon the Swallows had dug out their homes, some folks, who should have been better employed, came over from Connecticut and amused themselves by digging out the holes that the Swallows had made, thus compelling the birds to excavate new ones."

In the Henshaw collection are specimens from the following localities:—Sing Sing, N.Y., August (*A. K. Fisher*); Oyster Bay, Long Island, July 21 (*Roosevelt*); New Haven, Connecticut, May 20 (*C. H. Merriam*); Washington, D.C., May to August (*H. W. Henshaw*); Mount Carmel, Illinois, July 27 (*E. W. Nelson*); Whiting, Indiana, July 4 (*H. W. Henshaw*); and Cobham, Indiana, May 14 (*H. W. Henshaw*).

In Carroll County, Indiana, Mr. Evermann states that it is an abundant summer resident. Messrs. W. A. and J. A. Jeffries noticed the bird abundantly in May in North Carolina. In Fulton County, Kentucky, according to Mr. Pindar, it is a common

summer resident. Professor Elliott Coues in his 'Birds of the North-West,' writes:—"Ascending the Missouri in the spring of 1864, I saw thousands of these birds along the banks, which were, in suitable places, riddled with their holes. Again, in the fall of 1872, higher up the river, I observed multitudes of their deserted nests, often in the soft ground capping the bluffs, where, a little below, the bottle-shaped nests of the Cliff-Swallows were fastened in great masses." Mr. Hoffmann, in his paper on the birds of Nevada, has the following remark:—"Noted by Mr. Ridgway as rather abundant at Truckee Reservation in May. Found at Provo, Utah, by Mr. Henshaw. This species appears to associate with the Rough-winged Swallow (*Stelgidopteryx serripennis*), its habits being similar, though it is found less abundantly." Mr. Scott writes from Arizona:—"Breeds about Fort Lowell (*H. Brown*). I have no record of its occurrence except at this point, where I saw it in May and June." Mr. Drew states that in Colorado the Sand-Martin breeds from the plains up to 6000 feet.

Mr. Anthony states that he saw a single bird at Apache, in south-western New Mexico, on the 26th of July. In his paper on the birds of Texas, Mr. Dresser speaks of the Sand-Martin as "common throughout the whole country," and he noticed the first at Eagle Pass on the 20th of February. This statement is at variance with the statements of all recent observers. Near San Antonio, according to Mr. Attwater, it is only a "rare migrant." In Concho Co., Western Texas, Mr. Lloyd says it is a rare fall migrant. The same is the case in the south-western portion of the State, where Mr. Beckham records that several flocks were seen at Corpus Christi. Specimens are in the Salvin-Godman Collection from the last-named place, procured by Mr. Armstrong on the 8th of October, and the same collector met with the species at Brownsville in April and May.

In Florida the Sand-Martin is only known as a migrant. Mr. Scott records it from the Gulf coast of Florida, and states that it was "observed as an uncommon migrant in the vicinity of Tarpon Springs. Mr. Atkins has not met with the species at either of the points on the Gulf coast where he has collected." Mr. Scott has also noticed it in the Caloosahatchie region; and Messrs. Brewster and Chapman noticed it migrating on the Suwanee River.

Mr. Jones, in his list of the birds of the Bermudas, says that two specimens were killed by Captain Lye in September, and a few were seen near Hamilton on the 8th of August.

In Mexico the Sand-Martin had only been seen by Sumichrast near Tehuantepec until a few years ago, when Mr. W. B. Richardson procured some specimens at Xicotencal, in Tamaulipas, in May. Mr. Gaumer procured a single female in Cozumel Island on the 16th of May, and Messrs. Salvin and Godman got specimens near Dueñas in Guatemala and on the shores of the Lake Yzabal.

Very few notices have been published on the distribution in its winter home in South America. The Salvin-Godman Collection contains a single example from Bartica Grove in British Guiana, where it was procured by the late Henry Whitely on the 16th of April. In the same month Mr. Edward Bartlett met with the species at Nauta, on the Peruvian Amazons; and Natterer likewise procured it at Caiçara, in Brazil, in April, and noticed it near Maribatanas in flocks, consorting with *Hirundo erythrogastra*.

Mr. Cory, in his latest work on the 'Birds of the West Indies,' gives the Sand-Martin as occurring only in Jamaica, Cuba, and Porto Rico.

The life-history of the Sand-Martin is well known and has often been described. We have selected the description of the habits of the bird given by Mr. Henry Seebohm, as one of the best which has been written :—

"The habits of the Sand-Martin differ in several points from those of the House-Martin and the Swallow. The comparative rarity of suitable breeding-places makes it a much more local bird, and causes it also to appear much more gregarious; and the fact that it rarely breeds except in perpendicular earth-cliffs, which are seldom found except on the banks of rivers or lakes, makes it appear to be more partial to the neighbourhood of water than is really the case, though in this country the increasing number of railway-cuttings provides the Sand-Martins with other breeding-places, of which they are ready enough to avail themselves. In some localities the Sand-Martin is said to be the first Swallow to arrive in this country; but in most places where migratory birds are observed on passage it is recorded as being somewhat later than our other two species. The arrival of all the Swallows in spring is somewhat irregular: they seem to cross the water in small parties, and to fly very low, frequently even following the sweep of the waves. Krüper gave the end of March as the earliest appearance of the Sand-Martin in Asia Minor; but Irby frequently saw them at Gibraltar before the end of February. Wright says that they pass through Malta a little later than the other Swallows; and Naumann asserts that they seldom arrive at their breeding-quarters in Germany until early in May. In England they are frequently seen early in April. There seems to be little doubt that the Sand-Martins are the earliest Swallows to leave this country in autumn. During August their numbers rapidly decrease, and by the middle of September very few remain, though I have seen them on the Sussex coast as late as the middle of October.

"Immediately after its arrival in this country the Sand-Martin repairs to its breeding-place, and the old holes are used as sleeping-places at night. These holes are made in perpendicular earth-cliffs on the banks of rivers or lakes, on the sea-shore, or in railway-cuttings, sand-pits, gravel-quarries, or wherever a steep enough bank of suitable soil can be found. Sandy ground is usually chosen because it is easiest to excavate; but it must not be too loose, otherwise the sand would fall and bury the bird or her eggs. Sometimes very curious sites are chosen. I have seen Sand-Martins flying in and out of their holes which they had excavated in some enormous heaps of half-rotten sawdust lying near the Brandon station of the Great Eastern Railway. In Norway, between Lillehammer and the Dovrefjeld, many of the peasants' houses are roofed with turf, and some of these thick roofs of dry sandy peat are burrowed with nests of the Sand-Martin.

"In all cases the bird excavates its own abode, and generally returns to it several years in succession; but I noticed on the banks of the Danube many deserted colonies close to others where the birds were swarming. Both male and female assist in the process of excavation, which usually occupies only the early hours of the day, the rest being devoted to coursing through the air in search of food. The little creatures begin

by forming a small hole with their bills as they cling to the surface of the bank, sometimes with heads downwards. As this hole increases in size, they stand in the excavation, and throw out all the loose sand or chalk with their feet, boring away at times as much as four feet into the solid bank, but at others only two or three feet. In some cases a single pair of birds make two or three holes before they are suited. Occasionally a large boulder stops the way; or perhaps the sand is too hard or too soft; whilst many holes are abandoned at a depth of a few inches for no apparent cause whatever. The birds seem well aware of the principles of drainage, and provide for it by making their holes slant slightly upwards. The holes vary considerably in size and shape; some will run almost straight, others turn to the right or left, not in acute angles, but seemingly by accident, or to avoid obstructions in their way. Sometimes the holes are perfectly round, at others they will be rectangular, and often oval, and are usually two or three inches in diameter. The end of the hole is widened and hollowed into a kind of chamber, about six inches in diameter; and here the nest is formed. It is usually very slight—a mere bed of dry grass, coarse twitch, a few straws, and lined with one or two large feathers. The eggs of the Sand-Martin are from four to six in number. They are scarcely so polished as the eggs of the House-Martin, but are as pure a white, and vary in length from ·76 to ·62 inch, and in breadth from ·51 to ·46 inch.

"Early in June or late in May, in favourable seasons, is the time to collect fresh eggs of this bird; but many Sand-Martins have a second brood, which are rarely on the wing before the middle of August. Some of the colonies of these birds consist of enormous numbers, and on the front of the cliffs where they breed they have all the appearance of bees in the process of swarming. On the banks of the Danube, the Volga, and the great Siberian rivers, the numbers are sometimes almost incredible. One of these colonies is a most animating sight; the air is full of birds coming and going, and in front of the nests the crowd is so great that it is difficult to understand how each bird can thread the labyrinth. The Sand-Martin is almost as nimble on the wing as the Swallow, perhaps more so than the House-Martin; and, like both these birds, it often dips for a moment in the water as it skims over the surface to drink or to bathe. Now and then the birds cling to the face of the cliff, and the nearly fledged young often sit at the mouth of the hole to be fed by their parents. Sand-Martins are bold in defending their colony from intruders; and I have seen them leave the bank in a body to drive away a Merlin, which they pursued with great pertinacity."

In America some excellent accounts of the Sand-Martin's habits have also been published, but they agree almost entirely with those of European naturalists. Mr. Maynard writes as follows:—"These are the last of all the Swallows to make their appearance in New England, arriving about the middle of May. They then quickly repair to some sandy bank and begin to dig burrows in which to place their nests. They excavate the holes with their feet, aided by their bills, and although these members are seemingly weak the birds manage to get on quite rapidly, often penetrating a bank to the depth of three or four feet in a few days. These birds are highly gregarious, and from five hundred to a thousand pairs may be found breeding in a favourable locality. They are quite numerous in the interior, but seem to have a predilection for the coast,

and will even inhabit islands; in fact, I found a small colony nesting on a lonely islet, one of the Magdalene group, called Shagg Rock, which stands in the midst of the Gulf of St. Lawrence, more than a hundred miles from the mainland. The rock rose abruptly from the water to the height of 90 feet, but the top was covered with soil, portions of which overhung the water, affording the Swallows a fine opportunity to build. The rocky face of the cliff was inhabited by Cormorants; hundreds of Terns, that were breeding on the upper surface, hovered confusedly about, and filled the air with their harsh, continuous cries, but amidst all this discord the soft twitter of the Bank-Swallows could be heard as they flew quietly about their strangely chosen homes.

"Either these birds do not mate until they begin to construct their nests, or else they are polygamous, for it is quite common to see two or three males in pursuit of a single female; but I think the former hypothesis more probable, as both sexes incubate. The Bank-Swallows bring out their young early in July, and by the latter part of that month they accompany their parents in their aërial flight in search of insects; later, in August, they all disappear, being the first of all the Swallows to depart for the South."

Mr. Stearns, in his 'New England Bird Life,' has the following note:—"Their nesting-habits are very interesting. Given an embankment of earth soft enough to be worked—a natural exposure in the bed of a stream, a site left in running a railroad, a gravel pit—straight the busy birds come flocking to colonize. Soon the face of the escarpment will be seen studded with little round holes, before which the light wings dash in airy circles. The places are not unlike those the Kingfisher selects, and the larger entrance of the sturdy rattler's hole may sometimes be seen in the midst of the lesser openings. It is astonishing how far the weak birds, with their slight bills and claws, will manage to penetrate the ground; sometimes to the extent of two feet, though the burrows are not ordinarily so extensive as this. They also display much tact in selecting the most suitable soil to work in, neither too hard to be penetrated with ease, nor so soft as to cave in or be unsafe from the falling of loosened pebbles. Any one may be satisfied of this by examining a bank where different strata are exposed, and noting how the Swallows confine themselves to such belts of soil as suit them best. At the farther end of the passage-way the nest is placed—a slight affair of dried grasses lined with feathers. The eggs are from three to six in number. I have repeatedly found the latter number. There seems to be some irregularity in the time they are laid. I have found perfectly fresh eggs in the same nest with others containing well-formed embryos, and a friend informs me that he has seen in one nest fresh eggs and newly-hatched young. Is it possible, in such cases, that more than one bird has made use of the same nest? The eggs are pure white without markings, and measure 0·68 to 0·73 by about 0·50. They are first laid the latter part of May, with a second set later in the summer."

In the Natural History Museum at South Kensington is a group of mounted birds, illustrating the nesting of the Sand-Martin, and presented to the nation by Lord Walsingham, to whose liberality so many of the most important of the groups of British Birds, which are one of the principal attractions of the Museum in the present day, are due. The sandbank in which the Martins nested has not only been faithfully reproduced, but the actual dimensions of the tunnels, nine in number, have been preserved.

The nests were placed in the bank of a disused pit, and the soil consisted of clay, mixed with sand and small pebbles. Tunnel no. 1 was 2 feet long. Tunnels nos. 2 and 3 ran into a common passage 2 feet 8 inches long. Nos. 4 and 6 were each 2 feet 4 inches long. No. 5 was abandoned, the presence of a large stone preventing the bird from completing it. No. 8 was 2 feet 7 inches long, and nos. 7 and 9 were 3 feet 3 inches in length.

In the 'Birds of North America,' by Messrs. Baird, Brewer, and Ridgway, occurs the following note :—

"Mr. Augustus Fowler mentions a remarkable instance of sagacity and provident forethought in these birds, not easily separable from reason. In the town of Beverly, in a stratum of sandy loam, he observed each season a colony of some twenty or thirty pairs of these birds. In this place these birds never burrowed more than two or three feet. Within a mile of this place another colony excavated a bank in which the layer of loam was mixed with small stones. In this bank they excavated to the depth of five, seven, and even nine feet. Why was there this extraordinary difference in the length of burrows made by the same species, in situations not more than a mile apart? The reason for this difference, upon examination, became very obvious. We give the explanation in Mr. Fowler's own words :—'In one bank, where the earth was of a fine sandy loam, easily perforated, from the entrance to the extremity the burrows did not exceed three feet in length; while in the other bank, with harder loam to work in, one burrow was found nine feet in length. After examining six holes of nearly equal length, it appeared that these little birds had sufficient reason for extending their labours so far into the earth. In every instance where they met with a spot free from stones they finished their burrows; thus showing great care for the welfare of their eggs or young, by avoiding, in the stony soil, a catastrophe so great as would befall their treasures if by accident one of these stones should fall upon them.'"

As noticed by Dr. Taczanowski above, the situation of the Sand-Martin's nest in the low banks of rivers sometimes exposes the bird to the risk of destruction by floods; but an unexplained cause of the death of some of these little birds is given by Mr. Treat in the 'Auk,' for 1890 (p. 96) :—

"I made a trip to a place where hundreds of these birds breed every year. I saw no birds about the holes, and at once concluded that the birds had not bred there that year, but as the holes seemed to have been excavated recently, I examined them, and found dead birds in nearly every hole I dug into. Some of the birds were quite fresh, while others had the appearance of having been dead a long time. These birds were not in very good condition, but were far from being poor and emaciated. Almost all the holes contained nests, but very few had eggs in them, and two were the most I found in any one nest. As to the cause of their destruction I am wholly perplexed."

The Plate represents an adult and an immature bird from specimens in Mr. Wyatt's collection, and the descriptions are reproduced from the British Museum 'Catalogue of Birds.'

For the range of the present species, *vide infrà*, Plate 30 [Map].

COTILE DILUTA, sp. n.

PALE SAND-MARTIN.

Cotile riparia, pt. auct. ex Asiâ centrali.

C. similis *C. ripariæ*, sed ubique dilutior et torque præpectorali vix obvio.

Hab. in Asiâ centrali.

Adult male. Similar to *C. riparia*, but very much paler brown above, and the throat-band also very light brown and overshaded with ashy, so that the collar is not distinct. Total length 4·8 inches, culmen 0·4, wing 3·85, tail 1·8, tarsus 0·4.

Adult female. Similar to the male. Total length 4·6 inches, culmen 0·4, wing 4·05, tail 1·95, tarsus 0·4.

Hab. The neighbourhood of Tashkend in Central Asia.

The late Dr. Taczanowski, in his 'Faune Ornithologique de la Sibérie Orientale,' states that Mr. Janskowski, the well-known explorer of Russian Mantchuria, procured five examples of a Sand-Martin on the Sidemi River, close to the frontier between Ussuri Land and China, and not far from Vladiowstock: they were obtained by him towards the end of May. In the description of the species, which he refers to *C. sinensis*, Dr. Taczanowski distinctly speaks of a pectoral band, which, he says, is less pronounced in the Ussuri bird than in *C. riparia*. As is seen in our 'Key' to the species of *Cotile*, *C. riparia* and *C. sinensis* belong to two different sections of the genus, and as we entertained great doubt as to Dr. Taczanowski's identification, we wrote to our friend Mr. Stolzmann, who very kindly sent over the specimens in question. We find them to be absolutely typical *C. riparia*, not even *C. diluta* (as we expected), and they certainly have nothing to do with *C. chinensis*.

Of the pale race of *C. riparia*, which we propose to call *C. diluta*, we have seen two specimens collected by the late Dr. Severtzoff, and sent to the Natural History Museum by Dr. Pleske. These birds were collected by Dr. Severtzoff on the Badam River, near the fortress of Tchemkent. They have much the appearance of *C. sinensis*, as the throat-band is very indistinct and is shaded with silvery grey; but the band is absolutely represented, and in order to avoid all doubt as to the relations of the species, we may add that the development of the tarsal tuft proves that it is a form of *C. riparia* and does not belong to the *C. sinensis* group.

Of the winter range of this species we have little or no knowledge. The few specimens in the British Museum which seem to belong to the Pale Sand-Martin are

in bad condition; but we think that two birds collected by Griffith near Pushut in Afghanistan are referable to *C. diluta*, and a skin from Madras (*Jerdon*) may also belong to it, as well as a specimen collected by Mr. Pratt near Ichang in Central China. Now that attention has been drawn to this pale form of Common Sand-Martin, we shall doubtless receive more information respecting it, as a larger series than we possess in England is necessary for the correct determination of its range.

For the geographical distribution of this species, *vide infrà*, Plate 30 [Map].

COTILE SHELLEYI, *Sharpe.*

EGYPTIAN SAND-MARTIN.

Cotyle littoralis, Hempr. & Ehr. MSS.; Licht. Nomencl. Mus. Berol. p. 61 (1854: descr. nullâ).

Cotyle riparia (nec L.), Swinh. Ibis, 1864, p. 414; E. C. Taylor, Ibis, 1867, p. 57; Shelley, B. Egypt, p. 124 (1872).

Cotile shelleyi, Sharpe, Cat. B. Brit. Mus. x. p. 100 (1885).

C. similis *C. ripariæ*, et subalaribus brunneis, sed valde minor. Alâ 4·35 poll.

Hab. in Africâ septentrionali-orientali.

Adult male. Similar to *C. riparia*, but paler and much smaller. Total length 4·1 inches, culmen 0·3, wing 3·55, tail 1·65, tarsus 0·35.

Hab. North-eastern Africa: Upper Egypt to the Red Sea coast.

The Egyptian Sand-Martin seems to constitute a permanently small race of the Common Sand-Martin. It is a much smaller bird, somewhat lighter than the generality of the specimens of *C. riparia*, and with a narrower band on the chest. Dr. Sharpe named the species *Cotile shelleyi*, in honour of Captain G. E. Shelley, who has written the standard work on Egyptian Ornithology; but Dr. Reichenow has pointed out that the Egyptian Sand-Martin is really *Cotile littoralis* of Hemprich and Ehrenberg from the Argo Islands, of which no description was ever published. The name has generally been referred to *Cotile minor* of Cabanis, but the typical specimens in the Berlin Museum show that it belongs properly to the form described by Sharpe as *C. shelleyi*.

Captain Shelley says:—"This bird arrives in Egypt in great abundance in March, and towards the end of April commences breeding in colonies in the banks of the river side. It is extremely partial to the neighbourhood of water, and may be constantly seen skimming over the surface in its graceful flight, at times just touching the surface sufficiently to raise a slight ripple or dashing rapidly after its mate in the exuberance of its spirits."

Dr. John Anderson, during a recent visit to Egypt, very kindly interested himself in the matter of the Sand-Martins, and induced some of his friends to collect specimens, so that the British Museum has lately received from Colonel Edgar Larking several

examples from Upper Egypt; and Mr. J. C. Besly has also forwarded an example from Suez, but the latter proved to be the true *C. riparia*.

The exact range of the species is at present not defined. We believe, in fact, that many of the records attributed to *Cotile minor* really belong to *C. shelleyi*, as, for instance, when Baron von Heuglin states that the former species "breeds in Egypt," and is "common in Central Egypt along the whole of the Nile," we fancy that he has confused the two species together. We have endeavoured to show the ranges of both, as at present ascertained, in the maps of geographical distribution.

The description is taken from the type specimen in the Shelley Collection. No Plate has been attempted, as the colours of the species are so similar to those of *C. riparia* as to render a figure unnecessary.

For the geographical distribution of this species, *vide infrà*, Plate 30 [Map].



W W del

COTILE CINCTA.

Mintern Bros. imp.

COTILE CINCTA (*Bodd.*).

BROWN-COLLARED SAND-MARTIN.

Hirondelle brune à collier du Cap de Bonne Espérance, Daubent. Pl. Enl. vii. pl. 723.

Hirundo cincta, Bodd. Tabl. Pl. Enl. p. 45 (1783, ex Daubent.).

Brown-collared Swallow, Lath. Gen. Syn. ii. pt. 2, p. 577 (1783).

Hirundo torquata, Gm. Syst. Nat. ii. p. 577 (1788); Lath. Ind. Orn. ii. p. 579 (1790); Keulem. Nederl. Tijdschr. iii. p. 384 (1866).

Cotyle torquata, Rüpp. Syst. Uebers. p. 22 (1845); Bp. Consp. i. p. 342 (1850); Heugl. Syst. Uebers. p. 17 (1856); id. Ibis, 1859, p. 339.

Cotyle cincta, Gray, Gen. B. i. p. 60 (1845); id. Cat. Fissir. Brit. Mus. p. 30 (1848); Horsf. & Moore, Cat. B. E.I. Co. Mus. i. p. 97 (1854); Layard, B. S. Afr. p. 58 (1867); Gurney, Ibis, 1868, p. 43; Heugl. Orn. N.O.-Afr. i. p. 164 (1869); Finsch & Hartl. Vög. Ostafr. p. 144 (1870); Blanf. Geol. & Zool. Abyss. p. 349 (1870); Sharpe, P. Z. S. 1870, p. 297; id. Ibis, 1870, p. 479; id. Cat. Afr. B. p. 45 (1871); Ayres, Ibis, 1873, p. 281, 1874, p. 106; Ussher, Ibis, 1874, p. 62; Buckley, t. c. p. 375; Sharpe & Bouvier, Bull. Soc. Zool. France, i. p. 38 (1876); Ayres, Ibis, 1876, p. 424, 1878, p. 286; Bocage, Orn. Angola, p. 188 (1877–81); Shelley, Ibis, 1882, p. 259; Butler, Feilden, & Reid, Zool. 1882, p. 250; Bocage, Jorn. Lisb. 1882, p. 22; Sharpe, ed. Layard's B. S. Afr. pp. 358, 839 (1883); Salvad. Ann. Mus. Civic. Genov. (2) i. p. 121 (1884); Seebohm, Ibis, 1887, p. 343.

Cotyle eques, Hartl. P. Z. S. 1866, p. 325; Sharpe, P. Z. S. 1870, p. 297.

Cotile cincta, Gray, Hand-l. B. i. p. 73, no. 875 (1869); Sharpe, Cat. Birds in Brit. Mus. x. p. 101 (1885); Salvad. Ann. Mus. Civic. Genov. (2) vi. p. 232 (1888); Shelley, P. Z. S. 1888, p. 40.

Cotile eques, Gray, t. c. p. 74, no. 879 (1869).

C. major: caudâ haud albo maculatâ: subcaudalibus albis: torque præpectorali brunneâ.

Hab. in regione Æthiopicâ ferè totâ.

Adult male. General colour above brown, rather lighter on the rump and upper tail-coverts, the head somewhat darker; wing-coverts like the back, some of the outer ones near the bend of the wing with paler edges; bastard-wing, primary-coverts, and quills dark brown, a little lighter on the edges of the feathers; tail-feathers dark brown; lores blackish, as well as the feathers round the eye; above the lores a broad streak of creamy white; ear-coverts dark brown; sides of neck brown like the back; cheeks and entire throat white, separated from the breast by a very broad

band of chocolate-brown; rest of the body white, the flanks slightly shaded with smoky brown; in the centre of the breast a streak of dark brown in continuation of the brown pectoral band, several of the feathers being dark brown on their inner webs; thighs and adjacent feathers on the sides of the rump brown; axillaries and under wing-coverts white, slightly shaded with smoky brown; quills dusky brown below: "bill and legs black; iris dark hazel" (*T. E. Buckley*). Total length 6·1 inches, culmen 0·45, wing 5, tail 2·4, tarsus 0·5.

Adult female. Similar in plumage to the male. Total length 6·2 inches, culmen 0·4, wing 5, tail 2·4, tarsus 0·45.

Young. Differs from the adult in being somewhat darker, and in having rusty edges to the feathers of the upper parts as well as of the pectoral collar. Total length 6 inches, wing 4·7, tail 2.

The amount of brown in the centre of the breast varies with individuals, being sometimes scarcely perceptible, whereas in other examples it extends in a broad streak nearly to the abdomen. It seems to be most strongly developed in the birds of North-eastern Africa, which are also slightly darker, but it is impossible to separate specimens from the various parts of the continent. The white spot on the tail-feather, which induced Dr. Hartlaub to separate *C. eques* from *C. cincta*, appears to be merely an accidental character, for the West-African specimens in the British Museum do not possess it; though, on the other hand, Mr. Seebohm has one from the Transvaal which shows it, but several specimens from the latter locality which we have examined do not exhibit a trace of such a spot. As Count Salvadori has already pointed out, the males appear to exceed the females slightly in length of wing, the latter measuring from 4·9 to 5·15 inches, whereas the males have the wing 5·3 to 5·4 inches.

Hab. Nearly the whole of the Ethiopian Region.

The present species is easily recognized by the broad band of brown across the chest. Its range is set forth in detail below, and it would appear that it is found nearly everywhere in tropical Africa, but is more plentiful in the southern part of the Ethiopian Region.

The following is Mr. E. L. Layard's account of the species in South Africa:—

"The first specimens of this Bank-Swallow reached me from Capt. Bulger, of H.M. 10th Regiment (2nd Batt.), who procured it at Windvogelberg, on the frontier. I subsequently, in October 1865, discovered it about 14 miles from Cape Town, hawking about a small stream; it was there in some abundance. I again recognized a pair sitting on the telegraph wires near Somerset West; and on arriving at Mr. Vigne's farm found a pair breeding in the bank of the river Zonder End. The nest was about three yards deep, in a low bank. We did not obtain the eggs. The parent birds never seemed to fly far from the spot, but skimmed up and down the river. On our pointing them out, the Messrs. Vigne, who have paid some attention to the birds found in their neighbourhood, pronounced them strangers to them; and we do not think they have been in the vicinity of Cape Town till the year 1865. During the whole of 1866, Mr. L. C. Layard found them abundant near Cape Town, and after that date until we left the Cape this Swallow could always be met with in that vicinity during the summer months. We fancy that previously to this the species could not have been very plentiful at the western

end of the Colony, although Mr. F. R. Surtees, who has made a special study of these birds, tells us that he procured it in 1862. About the Berg River we found it not uncommon in September 1869, breeding in the river-banks and the sides of the ditches along the road to Malmesbury. It tunnels a hole about three feet long, of the size of a man's arm, inclining upwards, and the eggs (four or five) are pure white and rather sharp at the thin end. Axis, 10‴; diam. 6‴."

Mr. Ayres gives the following note respecting the bird in Natal:—'These birds I only found inland. Their flight much resembles that of the Rollers, and they utter a loud chattering note whilst flying. The specimen sent I shot in February near Pietermaritzburg; it is a heavy, large-sized Swallow, solitary and scarce. The stomach contained good-sized beetles, somewhat broken up.' Mr. T. E. Buckley obtained a male bird in the Drakensberg Mountains during his journey to the Matabili country. He observes:—'A summer migrant apparently, as I only saw them on our return journey; they were not particularly abundant, a few pairs only being seen together in this one spot.'" It is to be noted, however, that Mr. Seebohm considers that the present species is a resident in Natal, and remains there during the winter months.

Colonels Butler and Feilden and Captain Savile Reid, in their joint paper on the ornithology of Natal, observe:—

"First noticed in the Newcastle district early in October, after which it was fairly abundant, frequenting river-banks and 'vleys.' It has a very noticeable flight, less jerky and more vigorous than that of its congeners. Reid shot a fine female specimen when duck-shooting at 'Spoonbill' Vley, near the Buffalo. They appeared to be going to breed in November, in holes in the river-banks, but we did not meet with any occupied nests."

In the Transvaal, Mr. Ayres has recorded the species as a summer visitant to the neighbourhood of Potchefstroom, and he also found it tolerably common during the summer months about Lydenburg, where it was evidently breeding along the banks of the river. He also observed it in the immediate gold-fields, but not so plentifully. During the late Mr. J. S. Jameson's expedition to Mashona Land, the species was also met with, but we are not aware that its occurrence has been noticed in any portion of Eastern Africa to the north of the Zambesi.

In South-western Africa it has been procured by Señor Anchieta at Caconda in Benguela, and the British Museum has a specimen procured by Mr. Alfred Heath at Kinsembo in Angola. Messrs. Lucan and Petit met with the species at Chinchonxo on the Lower Congo in April, and in the British Museum is a specimen from Gaboon, obtained by one of the collectors of the Maison Verreaux.

It was met with on one occasion by Mr. Keulemans when on Prince's Island with Dr. Dohrn. His note is as follows:—

"I observed this species for several days in Prince's Island. The first time was in June, when I found a pair flying along the shores of the bay which is near the town of the island. They were very tame, and were continually resting on the twigs of a small

tree or bush. This species did not seem to be very strong on the wing, for after flying up and down for a few moments, both birds repeatedly rested for some time. I shot one, which proved to be the female, but judging from what I saw of the living birds, the male did not appear to differ in colour. I unfortunately did not secure the latter; for, immediately on the fall of his mate, he flew up high in the air and disappeared. In September I saw another individual sitting in exactly the same place where I had already killed the previous one, but I was obliged to abstain from shooting it, for fear of hitting some nigger boys who were in the neighbourhood. The call-note of this bird is like that of *Hirundo rustica*, but I did not hear any song. The present species is known to the inhabitants as an occasional visitor, and is called by some of them *Pascusha*, by others *Undurinha*. They also assert that it is found all through the year in the high mountains in the interior of the island, and comes sometimes to the shore."

The late Governor Ussher observed the present species during his expedition up the River Volta, and thus records the circumstance:—

"I never met with this Martin but once, up the Volta, where I shot it on a bough overhanging the water; but as great numbers of Swallows appeared skimming the surface of the water, I do not doubt that *C. cincta* was among them. The specimen then collected was one of a pair."

In North-eastern Africa we know more of the present species. Dr. von Heuglin writes:—

"This Swallow is a migratory bird in N.E. Africa. Rüppell met with it in the province of Barakit, and I found it near Adowa, at Mareb, and along the brooks of the provinces Dembea and Emfag, which feed the Tana Lake, from the beginning of May throughout the rainy season; and lastly in October, above a marsh between Tejura and Ghubet-harab, on the Adail coast; here, perhaps, in the act of migrating. It lives only in pairs, and breeds at the end of May on the high banks of torrents, in horizontal burrows dug by itself. I was never able to reach the nest itself, owing to its position. It is generally not much above the surface of the water, and just above deep places which could only be reached by swimming."

Mr. W. T. Blanford states that, during the Abyssinian Expedition he twice met with this Martin, "first on the shores of Lake Ashangi in April, and again about a fortnight later on the banks of a stream near Antalo."

Sir W. C. Harris procured a specimen at Angollála in Shoa, and it was also found by the late Marquis Antinori at Daimbi, in the Adda Galla country, in May, and again at Mahal-Uonz and the 'Kolla' of Mantek in August. He says that it was plentiful on Lake Cialalakà, which is in the Adda Galla district. Dr. Ragazzi met with it at Ulà in May, at Horà in June, and at Daimbi in June. In the collection presented by Emin Pasha to the British Museum were two female specimens obtained by him at Wadelai in February and October.

The descriptions are taken from the British Museum 'Catalogue,' and the bird figured is in Captain Shelley's collection.

COTILE CONGICA, *Reichenow.*

CONGO SAND-MARTIN.

Cotile congica, Reichenow, J. f. O. 1887, p. 300.

C. fasciculâ plumosâ ad finem tarsi absente: torque pectorali pallidè brunneâ: margine carpali nigro, albo fasciato.

Hab. in flumine Congico, Africæ occidentalis.

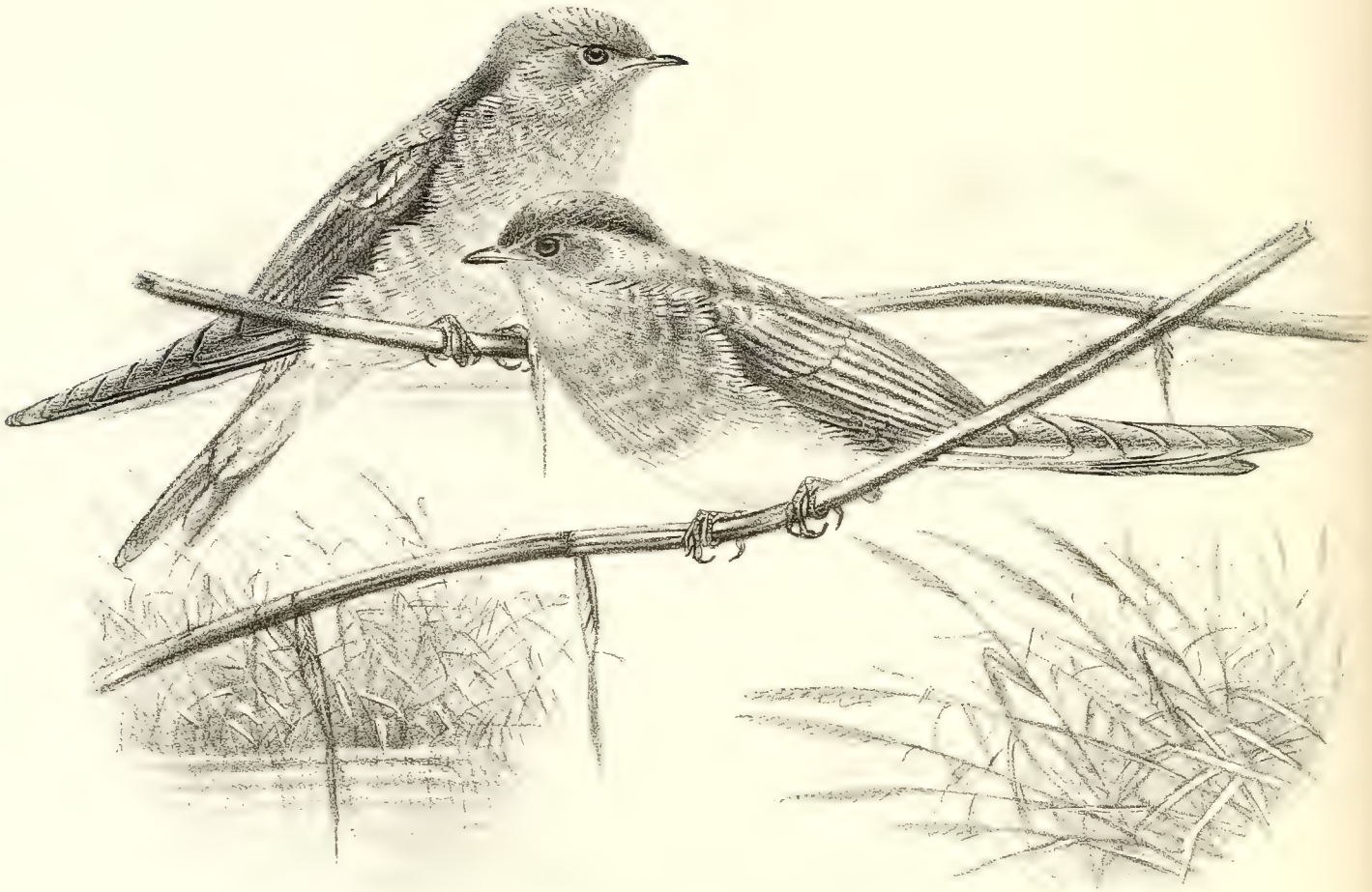
Female (not quite adult). General colour above mouse-brown, with whitish edges to the feathers of the back (remains of immature plumage), the inner secondaries being also edged with white at the ends; wing-coverts and quills blackish brown; upper tail-coverts lighter and more ruddy brown than the back; tail nearly square, dark brown, with lighter brown edges; crown of head decidedly darker and more dusky brown than the back; the ear-coverts and lores also very dark brown; cheeks, throat, and under surface of body white, with a distinct band of pale brown across the lower throat; sides of the body light brown, as also the under wing-coverts and axillaries; the coverts round the bend of the wing blackish, with white tips, as if barred with white: "iris blackish brown" (*F. Bohndorff*). Total length 4 inches, culmen 0·3, wing 3·75, tail 1·6, tarsus 0·4.

Hab. River Congo, West Africa.

This is a very curious little Sand-Martin, and holds an intermediate position between the two sections of the genus *Cotile*. Thus it has a brown band on the lower throat like *C. riparia*, but in its small size it resembles *C. minor* and its allies; and like the latter group of Sand-Martins, *C. congica* has no tuft of feathers at the back of the tarsus, while it differs from all the other members of the genus *Cotile* in having the lower margin of the bend of the wing barred with black and white.

The original specimens were obtained by Mr. F. Bohndorff at Manyanga, on the Lower Congo, between Vivi and Stanley Pool. One of them having kindly been sent in exchange by the Berlin Museum to the British Museum, we have been able to give a description of the bird.

For the geographical distribution of this species, *vide infrà*, Plate 31 [Map].



Mintern Bros. imp

COTILE PALUDICOLA

COTILE PALUDICOLA (*Vieill.*).

SOUTH-AFRICAN SAND-MARTIN.

Hirondelle des Marais ou la Brunette, Levaill. Ois. d'Afr. v. p. 158, pl. 246. fig. 2 (1806).

Hirundo paludicola, Vieill. N. Dict. d'Hist. Nat. xiv. p. 511 (1817); [Guérin in Ferr. et Gal. Voy. Abyss. iii. p. 242; Des Murs in Lefebvre Voy. Abyss. p. 79 (1847);] Grill, Zool. Anteckn. pp. 10, 36 (1858).

Hirundo palustris, Steph. Gen. Zool. x. p. 101 (1817).

Cotyle paludibula, Rüpp. Neue Wirb. p. 106 (1835); id. Syst. Uebers. p. 22 (1845); Heugl. Syst. Uebers. p. 17 (1856).

Cotyle palustris, Cab. Mus. Hein. Th. i. p. 49 (1850); Bp. Consp. i. p. 34 (1850); Cass. Cat. Hirund. Mus. Philad. Acad. p. 11 (1853); Layard, B. S. Afr. p. 58 (1867); Gurney, Ibis, 1868, p. 464; Ayres, Ibis, 1876, p. 424.

Cotyle albiventris, Licht. Nomencl. Av. p. 61 (1854).

Cotyle paludicola, Sundev. Krit. Framst., Levaill. p. 52 (1857); Heugl. Ibis, 1859, p. 339 (pt.); Kirk, Ibis, 1864, p. 326; Gurney, t. c. p. 347; Heugl. Orn. N.O.-Afr. i. p. 167 (1869, pt.); Sharpe, P. Z. S. 1870, p. 302; id. Cat. Afr. B. p. 45 (1871); Ayres, Ibis, 1874, p. 102; Buckley, t. c. p. 375; Shelley, Ibis, 1875, p. 68; Butler, Feilden, & Reid, Zool. 1882, p. 251; Sharpe, ed. Layard's B. S. Afr. pp. 361, 840 (1883); Seebohm, Ibis, 1887, p. 343.

Cotile paludicola, Gray, Hand-l. B. i. p. 74, no. 877 (1869); Ayres, Ibis, 1880, p. 260; Sharpe, Cat. Birds in Brit. Mus. x. p. 102 (1885).

C. minor: caudâ haud albo maculatâ: subcaudalibus albis: torque præpectorali nullâ: gutture et pectore brunneis, concoloribus.

Hab. in Africâ meridionali.

Adult. General colour above uniform brown; bastard-wing, primary-coverts, and quills dark brown, the inner secondaries edged with lighter brown; tail-feathers dark brown; lores dusky brown; cheeks, throat, and breast brown, with a slight hoary shade on the throat; sides of the body brown like the breast; centre of abdomen, lower flanks, and under tail-coverts white; thighs brown; axillaries and under wing-coverts brown, the coverts near the edge of the wing edged with whitish; quills dusky below: "bill and feet black; iris dark hazel" (*E. Buckley*). Total length 4·8 inches, culmen 0·3, wing 4·15, tail 2·3, tarsus 0·45.

In Capt. Shelley's collection is a specimen killed by himself in the Cape Colony which has the whole under surface brown, including the under tail-coverts. A like specimen, but rather darker on the

lower parts, was obtained by Colonel Butler near Newcastle in June, and Canon Tristram has a similar bird from the Transvaal. We have been unable to account for these variations in plumage, and are uncertain whether they are simply the signs of the very old birds, or constitute a melanistic variety. The Natal birds have more white on the abdomen than those from the Cape; and one from the Zambesi has the white on the lower parts still more extended, approaching *C. minor* of North-eastern Africa.

Mr. Thomas Ayres says :—"Specimens with the underparts dark, and entirely whole-coloured, are to be seen in company with the white-bellied birds, but are not nearly so common." Colonel Butler believes that the dark-coloured individuals are immature birds, but we cannot see any evidence of this in his specimens.

Young. Differs from the adult in having sandy-rufous edges to the feathers of the upper parts, and in having the under surface likewise washed with rufous.

Hab. South Africa, from the Cape Colony to the Zambesi.

As far as the evidence at our disposal goes, we have little hesitation in considering the present species to be strictly confined to South Africa, and we anticipate that all references to the birds' occurrence in North-eastern Africa will ultimately be found to have been intended for *Cotile minor*.

The following account of the species in the Cape Colony is taken from Sharpe's edition of Layard's 'Birds of South Africa':—

"The Cape Bank-Swallow is the earliest comer of all our migratory Swallows and Swifts. It is rarely seen far from water, and breeds in the banks of rivers or artificial dams, over which it continually hawks for flies. It lays three or four white eggs, of the same size and shape as those of our European *C. riparia*, and the nest is often run to the depth of two or three feet into the soil, when it is loose and friable.

"Mr. Cairncross, of Swellendam, informs us that, if the winter is mild, it remains about that part of the country during the whole year. Mr. Jackson has sent it from Nel's Poort. He also states that it stays with him all the year round. We saw this little species hawking about over a river in the Strand Veldt near Mr. J. Van der Byl's residence at mid-winter (end of June 1868). We found it breeding at the Berg River in the banks in the month of September. We also found it breeding at the 'Clay pits' near Graham's Town. Captain Shelley writes:—'At Ceres, in Cape Colony, I found this species very abundant, reminding me strongly of *C. riparia*, from which its dull-coloured breast most readily distinguishes it.' The late Dr. Bradshaw informed us that he found it to be a common species on the Orange River, where it is an early arrival and stays late. Mr. T. E. Buckley obtained one specimen out of a flock at Pietermaritzburg. Mr. Thomas Ayres gives the following note on the species in Natal :—'These Martins I have never seen on the coast. I found many of them during the winter months about the streams near Pietermaritzburg; they occasionally alighted to rest on the overhanging reeds, where, I have no doubt, they roost at night, as I have frequently found them thus

perched before the sun rose. Sometimes they hunted singly, sometimes in companies; and their flight being very eccentric, I found them difficult to shoot.' "

Colonels Butler and Feilden and Captain Reid write:—"A permanent and most abundant resident in the neighbourhood of Newcastle. It probably breeds twice, for Feilden found a nest containing three incubated eggs in the bank of the Buffalo River, on the 6th of August, and it was undoubtedly breeding in the clay-banks of the rivers and streams near Newcastle in October and November."

Mr. Ayres writes :—"This Martin is as common in the Transvaal in June and July as it is in the upper districts of Natal. They are fond of following in the course of a river, skimming along with rather eccentric flight within a few feet of the surface of the water."

In the Transvaal it is found all the year round, according to Mr. Ayres, and was noticed by him in the Lydenburg district. A specimen is in the British Museum from Shupanga on the Zambesi, where it was procured by Sir John Kirk as it was flying round the ship in the Elephant Marsh.

The descriptions are taken from the British Museum 'Catalogue of Birds,' and the figures in the Plate are drawn from specimens in Captain Shelley's collection.



C. W. W. del

Mintern Bros. imp.

COTILE MINOR.

COTILE MINOR, *Cab.*

SOUDAN SAND-MARTIN.

Cotyle minor, Cab. Mus. Hein. Th. i. p. 49 (1850); Heugl. Orn. N.O.-Afr. i. p. 166 (1869); Blanf. Geol. & Zool. Abyss. p. 350 (1870); Sharpe, P. Z. S. 1870, p. 303; Shelley, B. Egypt, p. 124 (1872).

Cotyle littoralis, Hempr. & Ehr. MSS.; Licht. Nomencl. p. 61 (1854).

Cotile minor, Gray, Hand-l. B. i. p. 74, no. 878 (1869); Sharpe, Cat. Birds in Brit. Mus. x. p. 103 (1885).

? *Cotyle palustris* (pt.), Heugl. Orn. N.O.-Afr. i. p. 167 (1869).

C. similis *C. paludicolæ*, sed minor.

Hab. in Africâ septentrionali-orientali.

Adult. Similar to *C. paludicola*, but smaller, and having a shade of silvery grey down the centre; remainder of abdomen and under tail-coverts white. Total length 4·5 inches, culmen 0·25, wing 3·9, tail 1·7, tarsus 0·3.

Young (one of the types of *C. littoralis*, H. & E.). Very pale brown, washed with sandy rufous, the feathers broadly edged with this colour, the rump and upper tail-coverts nearly uniform rufous; wing-coverts and quills darker brown, edged with sandy rufous; ear-coverts and sides of face pale brown, the lores and feathers of the head washed with rufous; throat and chest white, washed with pale rufous; sides of breast brown; centre of breast, abdomen, and under tail-coverts white; flanks brown washed with sandy rufous. (*Mus. G. E. Shelley.*)

A specimen collected by Sir W. C. Harris at Angollala in Shoa has the wing 3·85 inches.

Hab. North-eastern Africa from Central Egypt to Abyssinia, Somali-land and Equatorial Africa, probably migrating southwards, but the northern and southern limits of the species have yet to be defined.

This small Sand-Martin is so closely allied to the South-African *C. paludicola* that it is scarcely deserving of separation, and it is not surprising that it has been considered to be identical with that species by many naturalists. In fact little is known about it; and notwithstanding the universal testimony of naturalists to the wonderful profusion of the species in North-eastern Africa, in collections it is one of the rarest of the Swallows. Thus it is quite possible that an absolute connection with *C. paludicola* will one day be established.

At present we have only seen two specimens of *C. minor*, and the only difference between them and *C. paludicola* consists in the silvery grey shade on the throat and fore neck which is perceptible in the first-named bird. The extent of the brown colour

over the fore neck and breast seems to vary so much in *C. paludicola* that the distinctions we drew in the 'Catalogue of Birds' between the two forms, resting on this character, appear to us now to be undeserving of much credit. The grey on the throat may also prove to be due to seasonal changes, and in that case there will be nothing but the smaller size by which *C. minor* can be recognized.

The late Baron von Heuglin gave the following account of this species in his 'Ornithologie Nordost Afrika's':—

"This little Bank-Swallow is common from central Egypt along the whole of the Nile, as well as in Abyssinia. It breeds in Egypt and Nubia in small and large flocks, between the months of February and May, and also at the time when the water is lowest. The nest-holes resemble those of *C. riparia*, but are generally not so deep, and, according to Brehm, are often very near together, and always in the perpendicular alluvium walls of the banks.

"As early as June or July the old and young birds assemble in large flocks, flying backwards and forwards along the water, and often settling on the shore or on sand-banks. In September these little birds migrate southwards, swarming more especially in the evening, and passing in a dense cloud across the Blue and White Niles at Khartoum, falling in countless multitudes on the fields of Sorgho, where they often pass the night in company with Sand-Martins, Chimney-Swallows, and Wagtails. Some of the Europeans keep a sharp look-out for them at this time, and each year hundreds of these harmless little birds are taken with the hand, to be utilized for kitchen requirements. I have also observed the species in September and October on the Danakil and Somali coasts.

"As late as December 1862, we found a nest of the present species in a burrow, about one or two feet in depth, in the high bank of the Asam at Adowa. It consisted of dry grasses, and contained three eggs, nearly ready to hatch."

Mr. W. T. Blanford states that he saw this Sand-Martin in countless swarms on Lake Ashangi in April. They kept much in flocks, roosting among the reeds at night. Sir W. C. Harris met with the species at Angollala in Shoa.

The description is taken from Mr. Blanford's specimen in the British Museum, and the figure is also drawn from the same bird.



C W W del

COTILE COWANI

Mintern Bros.

COTILE COWANI, *Sharpe.*

DEANS COWAN'S SAND-MARTIN.

Cotile cowani, Sharpe, Journ. Linn. Soc., Zool. xvi. p. 322 (1882); id. Cat. Birds in Brit. Mus. x. p. 104 (1885).

Cotyle paludicola, var. *cowani*, Milne-Edwards et Grandid. Hist. Nat. Madag. xii. Ois. p. 398 (1883).

C. similis *C. paludicolæ* ex Africâ meridionali, sed ubique saturatior: subtùs brunnescens, abdomine paullo albicante, et gutture argentescenti-albo distinguenda.

Hab. in insulâ 'Madagascar' dictâ.

Adult female. General colour above dark sooty brown, slightly paler on the lower back and rump; wing-coverts like the back, the inner greater coverts and inner secondaries rather lighter and with slightly paler margins; primary-coverts and quills very dark brown; tail-feathers very dark brown, with narrow paler edgings, the outermost feathers very narrowly fringed with white; lores blackish; ear-coverts and sides of face dark sooty brown, the cheeks and throat ashy brown; remainder of under surface of body dark ashy brown, including the thighs; lower abdomen whitish; under tail-coverts pure white; axillaries and under wing-coverts dark ashy brown like the breast, the edge of the wing with paler ashy margins to the feathers; quills dark brown below, rather more ashy along the inner web. Total length 4·8 inches, culmen 0·25, wing 3·65, tail 1·9, tarsus 0·4.

Adult male. Similar to the female in colour. The male measures—total length 4·7 inches, wing 3·65, tail 1·9, tarsus 0·4.

Young. Differs from the adult in having rufous margins to the feathers of the upper surface, wing-coverts, and secondaries, while the throat and breast are also suffused with rufous.

On comparing this species with the South-African *C. paludicola*, it will be found that the difference consists in the darker colour of the Madagascar bird, which is brown underneath, with a well-marked silvery shine on the throat and fore neck.

Hab. Betsileo country, Madagascar.

For the discovery of this new species of Sand-Martin we are indebted to the Rev. Deans Cowan, an energetic missionary in Madagascar, who occupied his scanty leisure time in collecting objects of natural history in that wonderful island. Mr. Cowan met with it in the forest of Ankafana, in the western part of the province of Betsileo.

The species was discovered too late for it to be figured in the splendid work on the natural history of Madagascar, published by M. Grandidier, but it is mentioned by

Prof. Milne-Edwards and M. Grandidier in the volume devoted to the ornithology of the island. These gentlemen regard *Cotile cowani* as a variety or subspecies of the African *C. paludicola*, and this is the view advanced in the 'Catalogue of Birds.' They admit the differences of colour exhibited by the Madagascar form, but they consider that these "cannot be regarded as of specific worth, especially if one remembers that in Madagascar animals of the same species exhibit, in the eastern side of the island, a coat or a plumage of a darker tint than in the west."

The differences between this species and *C. paludicola* are, however, extremely well marked and constant, and we have no hesitation in recognizing it as a distinct form.

Our friend the Rev. Deans Cowan has given us the following note on this species:— "This bird, with its eggs, was on several occasions brought to me at Ankafana, a small forest about four miles west of the Great Forest in Betsileo. I gathered that these had been taken in holes in some bank, of which there were not a few about the place. The birds were taken at the same time as the eggs. There were a number of Swallows flying about the open glades of the forest, at about 50 to 60 feet from the ground. These I took to be *Cotile cowani*; but I never shot any of them, so that I am not positively sure that they were so.

"A small Swallow, perhaps *Cotile*, was very commonly to be seen at certain seasons skimming almost every large pool of water or river."

The descriptions are copied from the 'Catalogue of Birds' and the figures in the Plate represent an adult and a young bird from Captain Shelley's collection. According to Mr. Deans Cowan the native name is 'Firiringa,' the same as that of the *Phedina* of Madagascar.



Mintern Bros. imp.

COTILE SINENSIS.

COTILE SINENSIS (*J. E. Gray*).

INDIAN SAND-MARTIN.

Hirundo chinensis, J. E. Gray in Hardw. Illustr. Ind. Zool. i. pl. 35. fig. 3 (1830–32).

Hirundo brevicaudata, McClell. P. Z. S. 1839, p. 156; Gray, Gen. B. i. p. 58 (1845).

Hirundo sinensis, Jerd. Madr. Journ. xi. p. 238 (1840); Blyth, J. A. S. Beng. xvi. p. 119 (1847); id. Cat. B. Mus. As. Soc. p. 199 (1849).

Cotyle brevicaudata, Boie, Isis, 1844, p. 170.

Hirundo minuta, Hodgs. Icon. ined. in Brit. Mus., Passeres, pl. 9. fig. 2 (no. 333); id. in Gray's Zool. Misc. p. 82 (1844).

Hirundo subsoccata, Hodgs. Icon. ined. in Brit. Mus., Passeres, pl. 9. fig. 1 (no. 332); id. in Gray's Zool. Misc. p. 82 (1844).

Cotyle sinensis, Gray, Cat. Fiss. Brit. Mus. p. 30 (1848); Bp. Consp. i. p. 342 (1850); Cass. Cat. Hirund. Philad. Mus. p. 12 (1853); Horsf. & Moore, Cat. B. E. I. Co. Mus. i. p. 96 (1854); Jerd. B. Ind. i. p. 164 (1862); Swinh. Ibis, 1863, p. 257, 1866, p. 134; Blyth, t. c. p. 338; Beavan, Ibis, 1869, p. 404; Godwin-Austen, J. A. S. Beng. xxxix. p. 266 (1870); Swinh. P. Z. S. 1871, p. 347; Adam, Str. F. 1873, p. 370; Hume, Str. F. 1874, p. 469, 1875, p. 452; Blyth & Wald. B. Burm. p. 127 (1875); Fairb. Str. F. 1876, p. 254; Butler, Str. F. 1877, p. 227; David & Oust. Ois. Chine, p. 128 (1877); Anders. Rep. Zool. Exped. Yunnan, Birds, p. 651 (1878); Hume & Davison, Str. F. 1878, p. 45; Davids. & Wend. Str. F. 1878, vol. ii. p. 76; Ball, t. c. p. 202; Cripps, t. c. p. 257; Hume, Str. F. 1879, p. 84; Scully, t. c. p. 234; Doig, t. c. p. 370; Butler, Cat. B. Sind &c. p. 13 (1879); id. Cat. B. S. Bomb. Pres. p. 14 (1880); Murray, Vertebr. Faun. Sind, p. 103 (1884); Reid, Cat. Lucknow Mus. p. 18 (1886); id. Str. F. 1887, p. 18; Davidson, t. c. p. 293; Hume, Str. F. xi. p. 29 (1888).

Cotyle subsoccata, Adams, P. Z. S. 1858, p. 495, 1859, p. 176; Jerd. B. Ind. i. p. 163 (1862); Blyth, Ibis, 1866, p. 338; Jerd. Ibis, 1871, p. 353.

Cotile sinensis, Gray, Hand-l. B. i. p. 73, no. 865 (1869); Hume, Nests & Eggs Ind. B. p. 82; id. Str. F. 1873, p. 164; Oates, B. Brit. Burm. i. p. 309 (1883); Sharpe, Cat. Birds in Brit. Mus. x. p. 104 (1885); Swinh. & Barnes, Ibis, 1885, p. 60.

Cotile subsoccata, Hume, Nests & Eggs Ind. B. p. 82 (1873).

Cotile obscurior, Hume, Str. F. 1875, p. 43.

? *Cotyle obsolela*, Legge, B. Ceylon, p. 599 (1879).

C. similis *C. paludicolæ*, sed multo minor et uropygio paullò albicanti-griseo lavato.

Hab. in regione Indicâ et in sub-regione Indo-Sinensi.

Adult male. General colour above glossy brown, rather paler towards the rump and upper tail-coverts; wings a little darker brown than the back, with edgings of slightly paler brown, as well as on the inner secondaries; bastard-wing, primary-coverts, and quills dark brown; tail-feathers dark brown; lores, feathers round the eye, and ear-coverts brown; throat and breast ashy brown; lower breast, abdomen, and under tail-coverts white; flanks slightly washed with brown; thighs brown; axillaries and under wing-coverts brown like the breast but a little darker; quills dusky below, rather browner along the inner webs: "bill black; gape pale fleshy; iris dark brown; feet dusky brownish, claws dusky" (*Scully*). Total length 3·9 inches, culmen 0·25, wing 3·45, tail 1·6, tarsus 0·4.

Adult female. Like the male in plumage. Total length 4 inches, culmen 0·25, wing 3·3, tail 1·55, tarsus 0·35.

Young. Much lighter brown than the adults, and shaded with sandy rufous, all the feathers broadly edged with the latter colour, producing a nearly uniform rufous appearance on the lower back and rump; underneath, the portions of the throat and breast which are brown in the adult are pale sandy rufous.

Hab. Southern China and Formosa, Cochin China and the Burmese countries to Northern Tenasserim, Northern India from Assam to Sind, and south to the Central Provinces and the Southern Bombay Presidency.

This pretty little Sand-Martin is widely spread over India, but becomes rarer towards the south of the Peninsula, and is entirely unrecorded from many districts.

Mr. Hume says that it is abundant on all the great Punjab rivers and on the Indus, and his collection contains specimens from the banks of the latter and the Chenab River, obtained during his expedition to Sind in the month of December, at Mooltan, Sukkur, and Kusmore. Mr. Murray says that it is a permanent resident in Sind, and breeds at Buggatora and upwards, towards, and beyond Sehwan, in holes in the river-banks about January. Mr. Hume states that he has taken eggs in May on the Jhelum, and Mr. Scrope Doig found it nesting in the Eastern Narra in February. Colonel Butler, whose specimens from Deesa, procured in January, are in the Hume collection, considers it to be a permanent resident throughout Sind, Cutch, Káthiawár, and Gujarát, where, he says, it is common, but is, as a rule, confined to the banks of rivers. In a later-published note Colonel Butler gives the date of arrival as the 25th of June in 1876, and the date of departure as the 20th of April. He thinks that a few birds may remain all the year round, but the majority disappear in hot weather. He believes that it breeds on Mount Aboo. Mr. Hume adds a note that though it occurs in suitable localities in Sind, Cutch, Káthiawár, and Jodhpur, it is comparatively rare in the three latter. Dr. Leith Adams found the species abundant on the Chimouraree Lake in Ladak, and during the cold months on lakes and pools among the salt-ranges of the Punjab. Mr. R. M. Adam records it as very common near Sambhur, and has taken the nest on the 15th of April. Colonel G. F. L. Marshall has found the present species breeding near Saharanpur in

April, and Mr. Hume states that he has taken eggs on the Jumna in the Etawah district in February and April. The Hume collection also contains specimens procured near Delhi in October and December. The late Captain Beavan observed it in some abundance on the 1st of April, 1866, when on the march from Umbala to Kalka, and within some ten or twelve miles of the latter place.

In the Kumaon Bhabur, Dr. King procured specimens in January and March. Mr. R. M. Adam found it breeding in Oudh on the 23rd of April. Mr. George Reid says that in the Lucknow Division it is abundant along the banks of all the rivers, and frequents Hyder Ali's canal in vast numbers, breeding from February to May.

Dr. Scully found the species "fairly common in the valley of Nepal, and it resides there throughout the year; in winter it is very noticeable, as the Swallows and Swifts are then absent. It was met with in fair numbers in winter in the Nawakot district and Markhu Valley. The bird is usually found over wet fields and marshy ground, and along the course of streams. It has its holes and breeds in the banks of rivers and in the sides of the alluvial cliffs so common in the valley of Nepal." Specimens collected by him in February and May are in the Hume collection, which also contains an immature bird procured by Mr. Mandelli in Native Sikhim in May, and both old and young birds obtained by the same naturalist in the Bhotan Dooars.

In his 'List of the Birds of Manipur, Assam, Sylhet, and Cachar,' Mr. Hume writes:—"Occasionally seen about the larger streams in the Western and near the Southern Hills. Common throughout the basin, especially about the capital and the Logtak Lake; only very rarely met with in the Eastern Hills. I found this species occasionally in moderate-sized communities all along the rivers in Sylhet and Cachar. From the Valley of Assam I do not find it recorded, and I have as yet received no specimens thence, but it almost certainly occurs there."

Mr. Davison procured a specimen at Seraigung on the Brahmaputra River in December. Mr. Cripps states that it is decidedly common in the Dibrugurh district, along the larger rivers, where the banks are precipitous. During the rains they migrate.

Colonel Godwin-Austen, in his second list of the birds of the Khasia Hills, records it as breeding in January at Shirshang, in the banks of the Lumessary River. Some mistake has occurred in the dimensions of the specimens, as pointed out by Mr. Hume, the length being given as $12\frac{1}{2}$ inches, and the wing as $8\frac{1}{4}$ inches.

The Indian Sand-Martin is found near Calcutta, and Mr. Blyth has found it breeding in the banks of the Hugli during the cold season. Buchanan Hamilton states that the species is migratory near Calcutta, coming in October and leaving in March; but Jerdon states that he has seen them frequently in May, and during the rains also, but they were more scattered at the time. The same observer states that the species is rare in the south of India, where there are few rivers with high alluvial banks, but is found in every large river from the Godavery northwards, and swarming on the Ganges.

Near Faridpur, in Eastern Bengal, Mr. J. R. Cripps states that it is very common

during the cold weather, and their nesting-holes are to be seen in all the high banks. It breeds in February and March, and by the end of April all have left the district.

The Hume collection contains specimens from Raipur and the Sumbulpur district in the Central Provinces, and Prof. Valentine Ball obtained specimens of the species in the latter locality.

Colonel Swinhoe and Lieut. Barnes, writing on the birds of the Mhow district, observe:—"The Indian Sand-Martin is very common, and is a permanent resident, breeding in January and February in holes excavated by the birds themselves in the sandy banks of the river. The holes are from 18 to 24 inches in depth."

Mr. J. Davidson, in his rough list of the birds of Western Khandeish, writes as follows:—"Common in Taloda, Shada, and Nandurbar in the cold weather. I think it left the district in the hot weather, but find nothing about it in my notes and cannot remember. It bred abundantly along the Tapti in November and December." Messrs. Davidson and Wenden, in their notes on the Avifauna of the Deccan, state that it is tolerably common in that part of India. At Sangola it breeds singly, in river-banks, in December. On the banks of the Bhima, Mr. Davidson got a single nest with three fresh eggs in March.

Colonel Butler includes it as a permanent resident in the Bombay Presidency. He says it is "common, as a rule, in suitable localities throughout the region, but *not* as yet recorded from Ratnágiri. It probably avoids the forest tracts." Mr. Fairbank, in his list of birds from the vicinity of Khandala, records the species from near Satara, and the Hume collection contains a specimen from Rahuri in the Ahmednuggur district, procured on the 23rd of March.

In Colonel Legge's 'Birds of Ceylon,' mention is made of the occurrence of a Sand-Martin in that island, which had been observed by Mr. Bligh on several occasions during the north-east monsoon. Colonel Legge suggests that the species may have been *Cotile obsoleta*, but it is just as likely to have belonged to the present species.

In Burmah, Mr. Blyth states that it is common along the rivers, where it holds the place of *C. riparia* of Europe. Captain Wardlaw Ramsay found it near Tonghoo. Mr. Oates says that it is common in Aracan and Pegu in the neighbourhood of all the large rivers. Mr. Davison procured two specimens at Pahpoon, in Northern Tenasserim, in January, but says that it is rare in the province. He writes:—"I never saw it in the Gyne, Hongthraw, Attaran, or any of the more southern streams; in fact, I only observed it at Pahpoon, where they occurred in moderate numbers. When I was leaving Pahpoon, about the end of February, these birds were just commencing to excavate their nest-holes in the banks of the Younzaleen."

Dr. Anderson shot a couple of specimens on a little sandy promontory in the second defile of the Irawady. According to Dr. Tiraud it is common in Cochin China, and Abbé David states that it is spread over Southern China, and that he met with it in the south of Chensi, immediately after the melting of the snow, so that he supposes that it must winter in the hotter portions of the Celestial Empire.

The late Consul Swinhoe has given the following account of the species in the island of Formosa :—" Is a summer visitant to all suitable localities in the south of China, and is also found in all parts of Formosa, frequenting the steep sandy banks of rivers, into which it bores long galleries, constructing at the end of these its cup-shaped nest, and depositing therein three white eggs. Its winter migrations extend to the plains of Hindostan, where, curiously enough, it is reported by observers to nest again in the heart of winter. This is, I believe, the only well-authenticated fact recorded of this long-suspected habit in migratory birds. It visits Formosa in April, and leaves again in October.

" Some fifteen miles up the Tamsuy River, in a long sand-bank, I found several rows of perforations made by this bird. The birds were flying in and out of them in great numbers, so we stopped to examine them. Most of the holes were out of arm's reach; and as the bank was very steep, and composed of loose mud, we had great difficulty in establishing a footing. We managed, however, after much trouble, to insert our arms into several of them. The holes were in all stages of progress, some only just begun, others scarcely a foot deep; in some the eggs were hard-set, in others quite freshly laid. The holes ran into the bank with only a slight inclination from the horizontal. In all instances they turned a little to the right, extending in depth to about two feet,—their diameter being from two to three inches, which is enlarged to a cavity about six or eight inches broad at the bottom. In its cup-shaped base was placed the nest, composed of light straw and dried grasses and lined with feathers. One nest, however, had no feathers; but as it had no eggs, I concluded it was unfinished. The eggs in every case were only three in number, of a pinkish white, without spot or stain. On our disturbing the birds they rushed in consternation from their nesting-site, and after flying about low in the air at some distance in great agitation, they would meet together for some seconds as if in consultation. They would then again hurry off in different directions, and again meet. Finding we were in no hurry to leave their ground, they began to scatter and soar away to a considerable height. As soon, however, as we withdrew for a space, they returned, many diving at once into their burrows, others rushing backwards and forwards close past the holes, as if bewildered and afraid to enter. They were so numerous, and looked so small in the bright quivering light of a hot Formosan day, that they seemed to me at times more like Dragon-flies than birds." Again he writes :—" August 11th was a fine day, but very hot. I took a ten-mile ride into the country to the banks of a river near the foot of the first range of low hills. In the steep clay-banks occurred round holes bored by the Sand-Martin, but the little fellows had finished with them for the year."

Mr. Hume was inclined at one time to consider that *C. subsoccata* was distinct from *C. sinensis*, and that both species bred in India. He has since united them, and gives the following notes in his 'Nests and Eggs of Indian Birds':—

" On the 11th January, 1867, I came across a colony of Sand-Martins, breeding in the high sandy banks of the Jumna, below Sheregurh, very near, in fact, to the joint

boundary of Etawah and Cawnpore. I shot two of the birds and got some eggs. I revisited the spot on the 12th of March, and again shot a pair of the birds and obtained more eggs.

"They build in communities in sandy banks overhanging rivers. They bore a small hole, about 3 inches in diameter, from $1\frac{1}{2}$ to 3 feet deep, into the bank, usually sloping a little upwards, at the end of which they scoop out a sort of chamber, say 6 inches in diameter; there they make a nest of very fine twigs and grass lined with a few soft feathers of the Wild Goose, Brahminy, and such like water-fowl; they lay from two to three eggs.

"The nesting-time is from November to February in some parts of the country, and during April and May in others, and again at both periods in others.

"Mr. Blyth remarks (J. A. S. xvi. p. 119):—'I have found both newly-laid eggs and young *ready* to fly in the beginning of December (at Calcutta), and also at the end of February. The nest-holes vary in depth from $1\frac{1}{2}$ feet to considerably more, according as the banks are more or less hard, and the nest itself is composed of dry grass, with occasionally a few feathers in the lining; the eggs are pure white, like those of *C. riparia*.'

"Colonel G. F. L. Marshall, writing from Saharanpur, says that this species 'builds in the first half of April, in a hole about 4 feet into a bank, lining the end of the hole with grass and a few feathers, and lays four pure white eggs.' I myself have taken the eggs in May on the Jhelum, and on the Jumna, in the Etawah district, in February and April, but I have never found more than four eggs."

"From the Sambhur Lake, Mr. R. M. Adam tells us:—'The little Bank-Martin is very common about this. I obtained a nest on the 15th of April with two very hard-set eggs. The nest was found in a hole in a bank, and was a compactly built cup-shaped structure, outer diameter 4 inches; egg-receptacle a little over two inches. The nest was made of grass and fibres well rounded together; the outer portion of the nest was of a coarser quality than the lining, but made of the same material; depth of egg-cavity $\frac{3}{4}$ inch.' In Oudh I took a nest of this bird on the 23rd April. The nest was composed of coarse grass loosely put together, and having a lining of biggish feathers. Its diameter measured $3\frac{1}{2}$ inches.

"The eggs are white and glossless, closely resembling those of *C. riparia*, from which it would be difficult to separate them. Nominally they are a pointed oval, but somewhat cylindrical varieties occur. They vary a good deal in size, as do those of all the allied species. The eggs I took varied from 0·63 to 0·75 inch in length, and from 0·48 to 0·65 inch in breadth, and they averaged 0·68 by 0·5 inch."

Near Lucknow, writes Mr. Reid, "it breeds from February to May, making its nest invariably in holes in river-banks, &c., while its daily vocation appears to consist of an incessant whirling to and fro, relieved by frequent visits to its subterranean quarters. During May last I took many eggs from nests in the banks of the Goomti, of which 0·70 by 0·48 inch is the average measurement of ten."

Mr. Oates gives the following account in his 'Handbook to the Birds of British Burmah':—

"This little Sand-Martin is a very common bird at all seasons of the year. It is mostly found on and near large rivers where the banks are steep, but not unfrequently it may be observed far inland, hawking after insects like ordinary Swallows. It lays its eggs in a hole in a river-bank, the tunnel leading to the nest varying from one to four feet in length. The entrance to the tunnel and the passage itself is very small, but the egg-chamber is a roomy hollow. The eggs, which are four or five in number, are laid upon a pad of grass and are white. The excavation of the nest-holes is commenced in Burmah about November. The birds usually breed in large colonies, a firm and nearly perpendicular bank being selected for the purpose."

The evidence given above tends to prove that the Indian Sand-Martin nests in most parts of India, and is a resident, though no specimens in the British Museum bear a later date than May. The migrations in China, of which Consul Swinhoe and Abbé David speak, refer in all probability to the disappearance of the species in the cold weather to more southern latitudes; but it is questionable whether any great influx of individuals takes place at that season into the Indian region from China.

The descriptions are taken from specimens in the British Museum, and the figures in the Plate are drawn from some birds in the Hume collection.

APPENDIX

TO THE

GENUS COTILE.

COTILE CINCTA [*anteà*, p. 67].

Add :—

Cotyle cincta, Oust. Bibl. École Hautes-Études, xxxi. Art. x. p. 5 (1886).

Clivicola cincta, Reichen. J. f. O. 1892, p. 31.

Found by Emin Pasha at Bukoba in November, and by Dr. Stuhlmann in the same month at Kanssene, on the Victoria Nyanza. M. Révoil met with the species in Somali Land.

For the geographical distribution of this species, *vide infrà*, Plate 31 [Map].

COTILE MINOR [*anteà*, p. 77].

Add :—

Cotile minor, Salvad. Ann. Mus. Gen. (2) i. p. 122 (1884); id. op. cit. iv. p. 233 (1888); Sharpe, Ibis, 1892, p. 305.

Clivicola minor, Reichen. J. f. O. 1892, p. 32.

As mentioned under the heading of *Cotile shelleyi*, the MS. synonym of *Cotyle littoralis* of Hemprich and Ehrenberg belongs to that species, and not to *Cotile minor*, to which we had referred it.

The late Baron von Heuglin records *C. minor* as being common from Central Egypt along the whole of the Nile. We particularly requested our friend Dr. John Anderson to look out for it in Central and Upper Egypt, but up to the present time he has only succeeded in procuring *Cotile shelleyi* on the Nile.

The late Marquis Antinori met with this species on Lake Cialalaká in the Adda Galla country in May, while Dr. Ragazzi also obtained it at Toramesch in Shoa on the 11th of October. Dr. Reichenow likewise refers to this species a specimen obtained by Emin Pasha at Bukoba, on the Victoria Nyanza, on the 12th of January. He states that the last specimen differed slightly from typical examples in the Berlin Museum.

Mr. F. J. Jackson met with this species, in small numbers, by the Naiwascha Lake in September. The single specimen obtained by him did not entirely agree with the other

specimens of *C. minor* in the British Museum, not having the silvery-grey throat characteristic of the latter species.

For the geographical distribution of this species and of *C. paludicola*, *vide infrà*, Plate 32 [Map].

COTILE COWANI [*anteà*, p. 79].

Add:—

Cotile cowani, Sibree, Ibis, 1891, p. 441.

For the geographical distribution of this species, *vide infrà*, Plate 32 [Map].

COTILE SINENSIS [*anteà*, p. 81].

Add:—

Cotile sinensis, Oates, ed. Hume's Nests & Eggs Ind. B. ii. p. 178 (1890); id. Faun. Brit. Ind., Birds, ii. p. 273 (1890).

The late Dr. Taczanowski states that he received from Mr. Janskowski five specimens of this Martin from the Sidemi River, in the vicinity of Wladiowstock, near the frontier between the Southern Ussuri country and China. As he mentioned that the measurements were larger than those given by David and Oustalet, and spoke of a pectoral band, which is exactly the character which distinguishes *C. riparia* from *C. sinensis*, it seemed probable that his specimens were after all nothing but the former species; and this has since proved to be the case from an examination of the specimens in question, which were kindly submitted to us by Dr. Stolzmann.

The range of *C. sinensis* must also be extended to the Philippine Islands, a specimen being in the Cuming collection in the British Museum.

The following additional notes on the nesting of the species occur in Mr. Oates's edition of Mr. Hume's 'Nests and Eggs of Indian Birds':—

"Major C. T. Bingham writes:—'At Allahabad and at Delhi I have found nests of this little Sand-Martin in eight months out of the twelve, viz. in January, February, March, April, and May (one nest at Allahabad on the 3rd May, containing two very hard-set eggs and two young birds), and again in October, November, and December. They lay in holes excavated by themselves in the sandy banks of rivers and nullahs, these being from 1 to 3 feet deep and 2 inches in diameter, ending in a nest-chamber slightly larger than the tunnel, lined with straw or grass-roots, with a layer of soft feathers, on which the eggs, ordinarily four or five in number, lie.'

"The late Captain Cock sent me the following note many years ago:—'I first found

this Martin breeding in colonies in high sandbanks at Nowshera during the month of February; the place selected was the bank of the river Cabul, and the nests were often placed so close together that by enlarging one hole I could work laterally to the nest-chambers of other nests, for the nests were from two feet to three feet deep in the bank. The nest-chamber was always lined with dry grass, stalks, and a few feathers, and the eggs were usually four in number, pure white. In digging out these eggs and similar ones I use a narrow heavy trowel, and am invariably provided with a looking-glass to flash in the light to see what is in the hole before putting in my hand, as I once touched *Bungarus fasciatus*, and shall not forget it.'

"Mr. Doig took numerous nests in the Eastern Narra, in Sind, on the 17th February. He himself writes:—'Found numbers of the nests of these little birds in holes in the steep sandy banks along the Narra on the 21st February; of some 30 nests the greatest number of eggs in any one nest was four. The holes were from 2 to 3 feet in the bank, and the nest consisted of grass, lined with a few feathers.'

"Colonel Butler remarks:—'The Indian Sand-Martin breeds in the neighbourhood of Deesa in the cold weather. I found seven nests in the bank of a river near Deesa on the 23rd January, 1876, and dug them all out with the following results: No. 1, 1½ feet from entrance of the hole, contained three eggs slightly incubated. No. 2, 2 feet from entrance, contained four fresh eggs. Nos. 3, 4, 5, and 6 contained young ones nearly ready to leave the nest; others, young ones only just hatched. Most of the nests were within 2 feet of the entrance, but one was about 3 feet. The numbers of young birds varied from 3 to 4. The nests, as a rule, were thick pads of dry grass, fibrous roots, &c., thickly lined with good-sized soft feathers, loosely placed at the bottom of the nest. Some nests were thick and solid, others slight, small, and loosely put together. One nest was empty. I found another nest on the 2nd February in the same bank, containing one fresh egg. I took another nest in a river-bank on the 15th March, containing three fresh eggs; it was composed exteriorly of coarse, dry, rushy grass, and lined with fine dark-coloured fibrous roots, with one large solitary Kullum's feather at the bottom for the eggs to rest upon.'"

For the geographical distribution of this species, *vide infrà*, Plate 32 [Map].

GEOGRAPHICAL DISTRIB

←→ Migratory.

←/→ Bird of passage.

←⊖→ Remains locally during the winter.

←Δ→ Transplanted.

←ǂ→ Winter resident.

Δ Acc

◯ Per

Cha

∼ Visi

≈ Acc

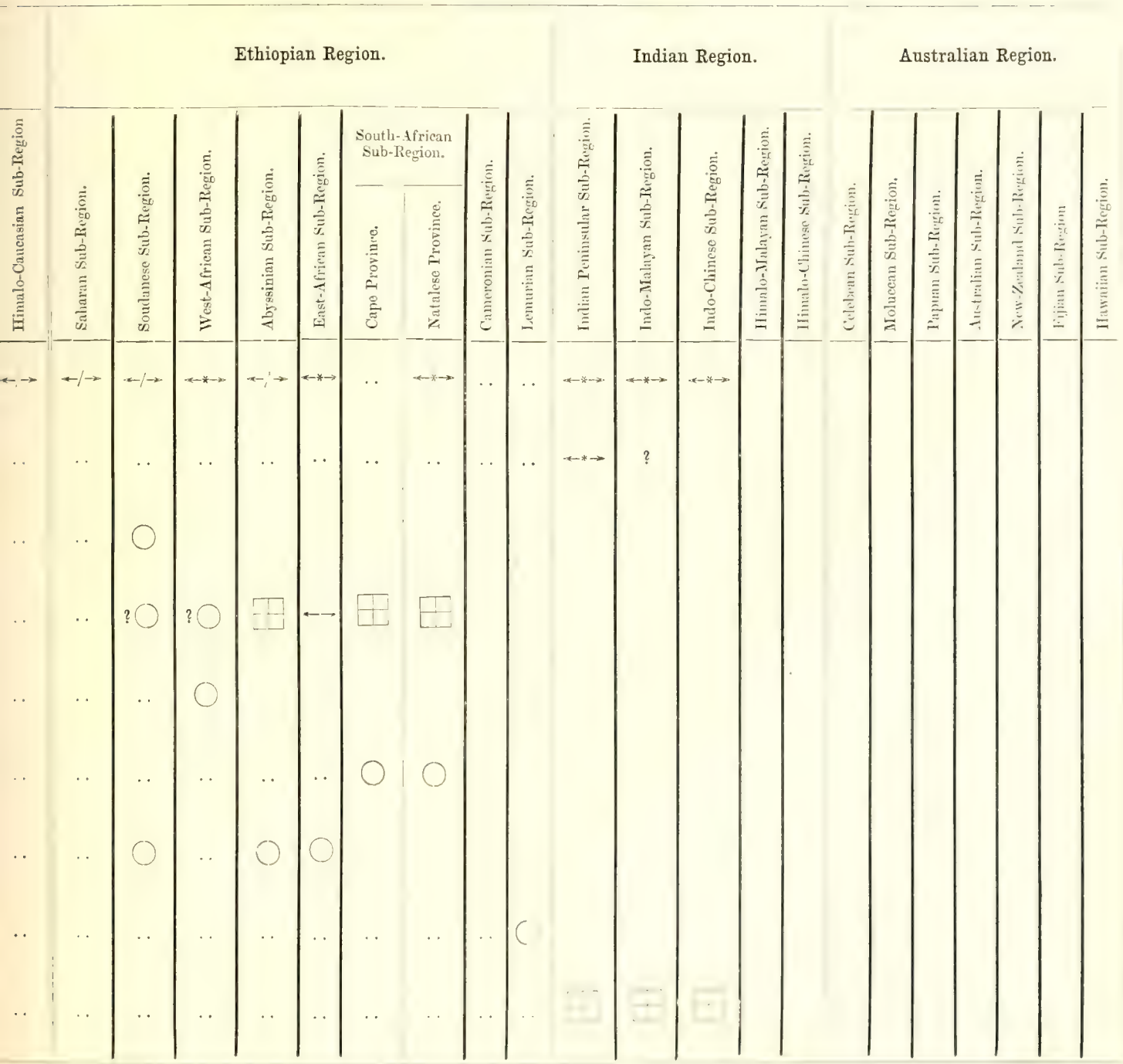
	Nearctic Region.										Neotropical Region.							Pa			
	Arctic Sub-Region.		Cold Temperate Sub-Region.				Warm Temperate Sub-Region.				Antillean Sub-Region.	Central American Sub-Region.		Sub-Andean Sub-Region.	Amazonian Sub-Region.	Brazilian Sub-Region.	Patagonian Sub-Region.	Arctic Sub-Region.	Eurasian Sub-Region.		
							Humid Province.		Arid Province.												
	Arctic Province.	Alaskan Arctic Province.	Hudsonian Province.	Canadian Province.	Sitkan Province.	Aleutian Province.	Appalachian Sub-Province.	Austro-Riparian Sub-Province.	Campestrian Sub-Province.	Sonoran Sub-Province.		Mexican Province.	Isthmian Province.						European Province.	Central Siberian Province.	East Siberian Province.
1. *riparia*	←/→	←/→	▦	▦	..	..	▦	←/→	←/→	←/→	←/→	←/→	..	..	←/→	←/→	..	▦	▦	▦	▦
2. *diluta*	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
3. *shelleyi*	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
4. *cincta*	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
5. *congica*	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
6. *paludicola* ..	..	.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
7. *minor*	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
8. *cowani* ...	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
9. *sinensis* ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

THE GENUS COTILE.

V Guest.

† Wanderer.

Rarely
Generally
In colonies
} nesting.



Genus III. BIBLIS.

	Type.
Biblis, Lesson, Compl. Buff. viii. p. 495 (1837)	*B. rupestris.*
Ptyonoprogne, Reichenb. Syst. Av. pl. lxxxvii. fig. 6 (1850) . . .	*B. rupestris.*
Krimnochelidon, Tickell, *teste* Walden, Ibis, 1876, p. 376	*B. concolor.*

Range. From North-eastern and Equatorial Africa, through Palestine and Persia to Central Asia, the Indian Peninsula, and the Burmese countries.

Clavis specierum.

a. Guttur et præpectus pallidè isabellina aut arenarea in colorem abdominis vix saturatiorem mergentes.

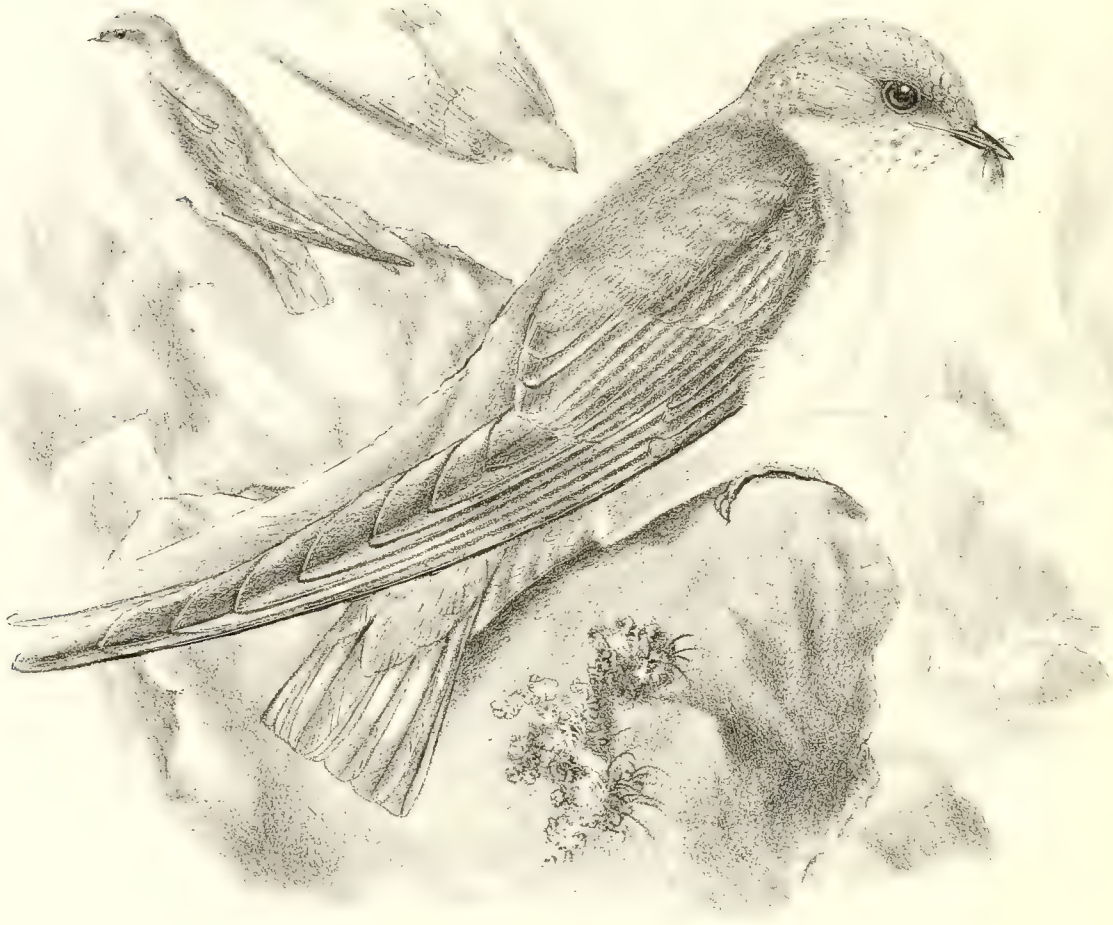
a'. Major: saturatior: alâ 4·9 poll.: mentum minutè brunneo maculatum . 1. *rupestris*, p. 99.

b'. Minor: pallidior: alâ minimè 6·0 poll.: mentum haud maculatum . . 2. *obsoleta*, p. 111.

b. Guttur et præpectus rufescentes: abdomine fumoso.

c'. Majores: guttur rufescens, unicolor . . . . . 3. *fuligula*, p. 115.
4. *anderssoni*, p. 119.
5. *rufigula*, p. 121.

d'. Minor: guttur sordidè rufescens, brunneo striolatum . . . . . 6. *concolor*, p. 123.



COTILE RUPESTRIS

Mintern Bros. imp.

COTILE RUPESTRIS (*Scop.*).

ROCK-MARTIN.

Hirundo rupestris, Scop. Ann. i. p. 167 (1769); Temm. Man. d'Orn. i. p. 431 (1815); Werner, Atlas, Chelidones, pl. 4 (1827); Ménétr. Cat. rais. Cauc. p. 45 (1832); Naum. Vög. Deutschl. vi. p. 91, pl. 146. figs. 1 & 2 (1833); Gould, B. Eur. ii. pl. 56 (1837); Nordm. in Démid. Voy. Russ. Mérid. iii. p. 199 (1840); Blyth, J. A. S. Beng. xvi. p. 119 (1847); id. Cat. B. Mus. As. Soc. p. 198 (1849); Linderm. Vög. Griechenl. p. 118 (1860); Dubois, Ois. d'Eur. pl. 33 (c. 1862); Moggridge, Ibis, 1863, p. 233; Bree, B. Eur. ii. pl. 184 (1864); Wright, Ibis, 1864, p. 57; Borggr. Vogelf. Norddeutschl. p. 100 (1869); Homeyer & Tancré, MT. orn. Ver. Wien, 1883, p. 83; Bonomi, Orn. Jahrb. ii. p. 248 (1891).

Hirondelle grise des rochers, Montb. Hist. Nat. Ois. vi. p. 641 (1779).

Rock-Swallow, Lath. Gen. Syn. ii. pt. 2, p. 569 (1783).

Crag-Swallow, Lath. tom. cit. p. 570 (1783).

Hirundo montana, Gm. Syst. Nat. i. p. 1020 (1788); Roux, Orn. Prov. pl. 142 (1825).

Chelidon rupestris, Boie, Isis, 1822, p. 550.

Cotyle rupestris, Boie, Isis, 1826, p. 971; Keys. u. Blas. Wirb. Eur. p. lxi (1840); Gray, Gen. B. i. p. 60 (1845); id. Cat. Mamm. etc. Nepal pres. Hodg. p. 55 (1846); id. Cat. Fissir. Brit. Mus. p. 29 (1848); Bp. Consp. i. p. 341 (1850); Cab. Mus. Hein. Th. i. p. 50 (1850); Cass. Cat. Hirund. Mus. Philad. Acad. p. 12 (1853); Horsf. & Moore, Cat. B. Mus. E. I. Co. i. p. 95 (1854); Jaub. et Barth.-Lapomm. Rich. Orn. 1859, p. 313 (1859); Tristr. Ibis, 1859, p. 434; Jerd. B. Ind. i. p. 166 (1862); Tristr. Ibis, 1863, p. 366; Giglioli, t. c. p. 474; id. Ibis, 1865, p. 51; Filippi, Viagg. Pers. p. 346 (1865); Wright, Ibis, 1865, p. 464; Chambers, Ibis, 1867, p. 103; Tristr. t. c. p. 363; Drake, t. c. p. 425; Saunders, Ibis, 1869, p. 392; Heugl. Orn. N.O.-Afr. i. p. 163 (1869); Wyatt, Ibis, 1870, p. 12; Elwes & Buckley, t. c. p. 200; Blanf. Geol. & Zool. Abyss. p. 350 (1870); Sharpe, P. Z. S. 1870, p. 300; Fritsch, Vög. Eur. tab. xxiv. fig. 6 (c. 1870); Salvad. Faun. Ital., Ucc. p. 53 (1871); Blanf. J. A. S. Beng. xl. p. 271 (1871); Jerd. Ibis, 1871, p. 353; Shelley, B. Egypt, p. 122 (1872); Brooke, Ibis, 1873, p. 237; Hume & Henders. Lahore to Yark. p. 177 (1873); Severtz. Turkest. Jevotn. p. 67 (1873); Dresser, B. Eur. iii. p. 513, pl. 164 (1874); Irby, B. Gibr. p. 104 (1875); Lilford, Ibis, 1875, p. 17; Dresser, Ibis, 1876, p. 189; Finsch, Ibis, 1877, p. 51; Prjev. in Rowley's Orn. Misc. ii. p. 162 (1877); Butler, Str. F. 1877, p. 227; Danf. Ibis, 1878, p. 8; Scully, Str. F. viii. p. 234 (1879); Irby, Ibis, 1879, p. 344; Finsch, Reis.

West-Sibir. p. 40 (1879); Bogdanoff, B. Cauc. p. 117 (1879); Wardlaw Ramsay, Ibis, 1880, p. 48; Radde, Orn. Cauc. p. 36 (1884).

Hirundo rupicola, Hodgs. J. A. S. Beng. v. p. 781 (1836).

Biblis rupestris, Less. Compl. Buff. viii. p. 495 (1837); Degl. et Gerbe, Orn. Eur. i. p. 597 (1867); Doderl. Avif. Sicil. p. 147 (1869); Salvad. Elench. Ucc. Ital. p. 83 (1887); Olphe-Galliard, Contr. Faun. Orn. Eur. Occid. fasc. xxii. p. 84 (1887).

Hirundo inornata, Jerd. Madr. Journ. xiii. p. 173 (1844).

Ptyonoprogne rupestris, Reichenb. Syst. Av. pl. lxxxvii. fig. 6 (1850); Loche, Expl. Sci. Algér., Ois. ii. p. 68 (1867); Swinh. P. Z. S. 1871, p. 347; Hume, Nests & Eggs Ind. B. p. 84 (1873); id. Str. F. 1873, p. 2; Scully, Str. F. iv. p. 131 (1876); Fairb. t. c. p. 254; David & Oust. Ois. Chine, p. 129 (1877); Butler, Cat. B. Sind etc. p. 13 (1879); id. Cat. B. S. Bomb. Pres. p. 14 (1880); Terry, Str. F. x. p. 469 (1887); Oates, Faun. Brit. Ind., Birds, ii. p. 273 (1890); id. ed. Hume's Nests & Eggs Ind. B. ii. p. 184 (1890).

Cotile rupestris, Gray, Hand-l. B. i. p. 73. no. 872 (1869); Butler, Str. F. iii. p. 453 (1875); Hume, t. c. p. 453, note; Wardlaw Ramsay, Ibis, 1880, p. 48; Biddulph, Ibis, 1881, p. 47; Giglioli, t. c. p. 192; Scully, t. c. p. 427; Dixon, Ibis, 1882, p. 561; Seebohm, Ibis, 1883, p. 22; Severtz. t. c. pp. 70, 81; Irby, t. c. p. 183; Tristr. Faun. & Flor. Palest. p. 62 (1884); Saunders, Ibis, 1884, p. 275; Whitehead, Ibis, 1885, p. 27; Reid, t. c. p. 244; Sharpe, Cat. B. Brit. Mus. x. p. 109 (1885); Zarudn. Ois. Transcasp. p. 32 (1885); Gigl. Avif. Ital. p. 190 (1886); Scott Wilson, Ibis, 1887, p. 138; Tait, t. c. p. 190; Radde, Ornis, iii. p. 490 (1887); Scully, J. A. S. Beng. lvi. p. 83 (1887); Pleske, Mém. Acad. Imp. St. Pétersb. (7) xxxvi. p. 41 (1888); Chapman, Ibis, 1888, p. 68; Sharpe, Trans. Linn. Soc. (2), Zool. v. pt. 3, p. 77 (1889); Eagle Clarke, Ibis, 1889, p. 529; Gigl. Primo Resoc. Avif. Locali, p. 649 (1890); id. op. cit. Ind. Gen. p. 510 (1891); Sharpe, Rep. Sci. Res. 2nd Yark. Miss., Aves, p. 106 (1891).

Cotyle (*Ptyonoprogne*) *rupestris*, Blanf. East. Persia, ii. p. 216 (1876).

Clivicola rupestris, Brusina, Motr. (List of Birds of Croatia, etc.) p. 59 (1890); id. Orn. Jahrb. ii. p. 17 (1891).

C. major: rectricibus plerisque albo-notatis: subcaudalibus saturatè brunneis: gutture pallidè isabellino, mento minutè fusco-maculato.

Hab. in regione Mediterraneo-Persica totâ, per Asiam Centralem, et per peninsulam Indicam usque ad montes Mongolianas et Chinenses.

Adult. General colour above light ashy brown, a little darker on the head, the rump and upper tail-coverts decidedly lighter; wing-coverts and quills dark brown, the inner greater coverts and inner secondaries paler and more like the back; tail-feathers dark brown, all but the two centre ones and the outermost on each side unspotted, the remainder with a large oval white spot on the inner web; lores, cheeks, and ear-coverts dull brown; under surface of body creamy buff, becoming deep sandy buff on the lower breast and abdomen; the chin and upper throat with dusky spots; flanks, vent, and under tail-coverts dull smoky brown, the latter slightly edged with rufous; axillaries

and under wing-coverts dull smoky brown with faint rufous margins, more distinct on the small coverts near the edge of the wing; quills dusky brown below, more ashy along the inner web: "bill black; legs and feet fleshy, claws dusky; iris dark brown" (*Scully*). Total length 5 inches, culmen 0·35, wing 4·9, tail 2, tarsus 0·4.

Adult female. Similar to the male in plumage. Total length 5·3 inches, culmen 0·35, wing 4·9, tail 2·1, tarsus 0·4.

Young. Much more rufescent than the adults, especially on the under surface of the body, the throat showing no traces of the brown spots which are characteristic of the old birds; the entire upper surface with rufous margins to the feathers, less distinct on the quills.

There seems to be very little difference between the plumages of adult birds in winter and summer, but most of the specimens procured in the winter season are somewhat more rufous than those obtained in summer. This may be due, perhaps, to the fact that many of them are young birds of the previous year, and a greater amount of rufous colour on the underparts was to be expected. During the breeding-season, when the plumage becomes bleached, the throat and chest are perceptibly whiter, the abdomen paler brown, with only a slight wash of rufous, and the margins of the under tail-coverts are whitish.

Hab. Found in suitable localities from Portugal in the west throughout the whole of the Mediterranean Region and Persia to the Himalayas and the Nilghiri Hills in India, and eastwards to the mountains of Mongolia and Northern China. In most places it seems to be a resident, but in some countries it is more or less migratory.

An excellent record of the localities frequented by the Rock-Swallow in the south of France and Switzerland is given by M. Léon Olphe-Galliard in his work on the Ornithology of Western Europe. He has himself found the bird in the Basses-Alpes and Valais, and gives besides instances of its occurrence in various places of Southern France. Messrs. Jaubert and Barthélemy-Lapommeraye state that in the latter locality the Crag-Martin is an inhabitant of the more alpine rocky localities, only visiting the lower valleys during migration. In the month of February, if the weather is fine, the Crag-Martins appear in the valleys of the Var and Basses-Alpes: as they pass on, their place is taken by other immigrants, and it is the last arrivals which become the summer residents. They frequent the rocky heights near Moustiers, and are found more rarely on the banks of the Durance and Verdon, and sometimes on the rocks of Gréoulx. They quit the latter neighbourhood in the month of July, doubtless, as the authors remark, to rear a second brood at a higher elevation. The birds are stated to be much more plentiful in spring than in autumn. Bailly states that the Crag-Martin breeds throughout Savoy in the mountains, especially in the neighbourhood of lakes and rivers. It is common in the spring, especially near Chambéry and in the rocks on the banks of the Rhone, as well as those at Saint-Genix, Yenne, on the shores of Lake Bourget. It is common at the castle of Bordeaux as far as Hautecombe, and breeds in the monastery buildings of the latter place. In the Riviera Mr. Traherne Moggridge has stated that he found it near Mentone in winter.

The present species is common in several of the Swiss valleys. Thus Mr. Scott-Wilson writes:—

"I saw the Crag-Swallow flying about the perpendicular crags of the Gemmi in June 1885; but observed it more particularly, and found it breeding, on the 1st of June, 1886, near Meiringen. The two nests I saw were placed against the face of an almost perpendicular crag, about thirty yards from the ground, and I could see the head of the old bird projecting as it sat on the nest; but, alas! both nests were quite inaccessible from below or from above, as they were placed immediately beneath an overhanging projection of rock. We watched the birds nearly all day—both when high above with slow undulating flight and when dashing past, catching insects. According to our guide, the Crag-Swallows pass the winter here in the Haslithal, hiding in caves and crevices in the rocks; and he says he has seen them in winter flying about the village of Meiringen. We also saw the bird about the rocks of the Brünig Pass."

In the Austrian Tyrol it has been found nesting on the Garda Lake, near the town of Riva, by Von Tschusi zu Schmidhoffen; and Mr. Dresser summarizes the notes from this neighbourhood as follows:—"Mr. A. Rindfleisch observed six or eight at the 'Engelswand,' between the villages of Oetz and Umhausen, in September 1853, and also saw it at the Martinswand, near Innsbruck. Mr. Luigi Althammer, in his list of the birds of the Tyrol, speaks of it as arriving later and leaving earlier than *H. rustica*, breeding in the most precipitous places; and, according to Bruhin, it breeds annually in the Vorarlberg, close to the 'Hängender Stein,' near Bludenz."

Many observers have noted the occurrence of the Crag-Swallow in the Pyrenees; and M. Olphe-Galliard gives the following places in his work on the birds of Western Europe:—Basses-Alpes (*Bailly*), Dauphiné (*Bouteille*), Gard; rocks which border the Gardon, and those of Vidourle near St. Hippolyte (*Crespon*); Aude, all the summer; Ariège, May to September; Gers, only in autumn; Hérault, April to September; Tarn in Pyrenees, on passage, a few remaining for the summer; Tarn-et-Garonne, on passage, only in autumn; Eastern Pyrenees, from the end of April to the end of September.

Mr. Howard Saunders, writing on the birds of the Pyrenees, says that the Crag-Martin is resident throughout the year from the Pas de Roland, near Cambo, to the gorges of the Eastern Pyrenees. Colonel Irby found it nesting in numbers about the Desfiladero, near La Harmida, in the Santander district. Mr. Eagle Clarke found the bird breeding in the town of Andorra, and we append his notes on the occurrence:—

"Perhaps the most interesting of our observations related to the breeding of the Crag-Martin (*C. rupestris*) under the eaves of the houses in the centre of the town of Andorra. . . . . Several attempts were made to procure a specimen, but it was found most difficult to avoid covering windows and other undesirable objects with the gun, and several snap-shots at the bird failed. The nests, of which we saw four in the town, were placed, in three instances, about three inches below the eaves on the house-side, the fourth being placed on the side of a beam supporting an overhanging roof, which it was just under. The nests were large structures of mud, quite open at the top, and

the one which we managed with great difficulty to reach was lined with feathers; but though the bird was in the nest, and the date was the 22nd of May, yet no eggs were contained in it, much to our disappointment. The other nests were beyond reach, save one; and the owner of the house assured us that it contained no eggs, but would not allow us to ascertain if such was the case. This instance of the breeding of the Crag-Martin in the narrow streets of the town of Andorra is, it is thought, a somewhat unusual circumstance, and more especially so as the town is not situated upon, or in the close proximity of, crags or cliffs. . . . . The bird was also noted in the villages of Escaldas and Encamp; but we did not observe any nests, which might, however, have existed. There were plenty of them on the great cliff at Canillo. The species was very abundant on the great cliff below Merens, Upper Ariège, where the many recesses in its face offered abundant nesting-sites."

Mr. Howard Saunders says that in Southern Spain the species is "resident throughout the year, frequenting rocks and old ruins, also modern edifices, provided that they are perched on the edge of a crag. A colony which frequented a gorge of the Segura were only to be seen between twelve and one o'clock each day." Although the birds were evidently breeding, he did not succeed in finding a nest.

Colonel Irby gives the following note on the species near Gibraltar:—"The Rock- or Crag-Martin, though universally distributed during the breeding-season in the rocky Sierras, is to a great extent migratory. Those which do not quit the country appear during the daytime in low ground near the coast about the middle of October, great quantities being then seen about Gibraltar. They roost at that season about low rocks, especially about the Rock. In March they return to their breeding-haunts, some nesting in inaccessible places at the 'back of the rock.' They commence about the 10th of March to build their nests, which resemble those of the House-Martin (*Chelidon urbica*). Placed in the roofs of caverns, these nests are very difficult to reach, and I did not succeed in examining the inside of one. The birds were sitting by the 30th of April. One locality for nests near Gibraltar, and the most accessible that I have seen, is a cave in a patch of rocks at the entrance of La Trocha, on the road from Algeciraz to Ojen, where it passes by the side of the ravine called 'La Garganta del Capitan.' At the back of the rock, at Gibraltar, is a cave almost under the Osprey's eyry, which can only be entered by landing from a boat in fair weather. This cave is very large and open, with sand at the bottom, sloping upwards for a considerable distance at a sharp angle. The end of this cave, judging from the tracks of divers Genets or Striped Cats (*Viverra*), seems to be the regular dining-room of those animals; for whenever I have visited the place it was covered with the tail-feathers and pinions of numbers of Rock-Martins, mingled with those of a good many Swifts, Rock-Doves, and a few Lesser Kestrels."

According to Mr. Tait, the species is "resident in Portugal all the year round, but partially migratory within it. The Crag-Swallow makes its nest in the precipitous cliffs of the inland serras, and I found one on a cliff of the Abiturura, above Melres, on the right bank of the Douro. In shape it resembles that of the House-Swallow; it was

built of mud and had a few feathers in it. At the end of October or beginning of November flocks of about eight to twenty birds appear at the sea-side in the neighbourhood of Oporto, and remain till about the end of February or the beginning of March." As stated by the late M. Favier, it is "nearly as common as the House-Martin about Tangier. Sometimes they pass in large flights, crossing the Straits in February and March, returning in October and November." Capt. Savile Reid, during his winter residence in Morocco, states that the species was seen by him in the Laraish Valley on two consecutive warm sunny days, but not at any other time or place. Mr. Tyrwhitt Drake noticed it near Tetuan towards the end of March, but only in very small numbers.

In Algeria, Loche says, the bird is not very plentiful, but he found it nesting in the gorges of Chiffa. Malherbe speaks of it as a common bird at Bône, where it occurs in large numbers on migration in December. Canon Tristram states that in the Eastern Atlas it is found as a resident, and he has noticed it in every month from September to July. He also saw two in December in a ravine in the M'Zab country. Mr. W. T. H. Chambers states that he recognized the species in Tripoli on one occasion only, and it struck him to be "an old Nile acquaintance." It is quite possible that his instinct was right, and that the bird he saw was *C. obsoleta*, which is the species of the Nile, and not *C. rupestris* at all.

Major A. von Homeyer noticed the Rock-Swallow as a bird of passage in the Balearic Islands. There is doubtless some mistake in Schembri's statement that the present species is rather common in Malta both in the spring and autumn migrations, for Mr. C. A. Wright at first stated that he never met with a single specimen during his long residence in the island. Subsequently, however, he did procure the species from Gozo in March, and he received the following note from the late Professor Leith Adams :—"I have just returned from Gozo :—Feb. 22, Rabato, Gozo. A pair have been sporting about the foot and sunny side of the square all day. Feb. 23. Weather very cold—even snow fell to-day ; but nevertheless I saw a flock of ten sporting about in the gorge of Schlendi. I have noticed this Swallow about Rabato in summer, but I have not been able to confirm its identity till yesterday. I think, perhaps, individuals remain throughout the year in Gozo."

In Sardinia the late Mr. Basil Brooke recorded the Crag-Martin as common and resident. Count Salvadori has given the following note on his experiences in the island :—"Its name of *Rondine marina* may be derived from the fact that it frequents caves near the coast. I saw it in January about the Grotta dei Colombi. It is also met with in the interior. I observed many inhabiting the beautiful Grotto of Oridda, near Domus Novas, and also in the rugged rocky mountains. In the beginning of April I saw some at Mount Ogliastra, near the Flumendosa ; and later (about the middle of April) near Capoterra, at a creek, where they were collecting some clay for building their nests. I do not know anything at all about their visiting the towns, which, as Cara states, positively takes place after the other Swallows have left."

Mr. J. Whitehead writes concerning the species in Corsica :—"Fairly common

and resident. With bad weather this bird comes down to the plains ; otherwise it remains high up the mountain-sides during the whole year. I took a nest on May 13th with four fresh eggs."

Count Salvadori and Dr. Giglioli both state that the species is resident in the parts of Italy where it breeds, but that a considerable migration also takes place; and the latter gentleman writes, *à propos* of a suggestion of Canon Tristram, that he could not find satisfactory evidence of a single locality where the species is found only in summer :—"The bird in question certainly leaves Genoa in the winter; it arrives early in March, nests in considerable numbers at Schiena d'Asino, where the torrent Bisagno has its source, and leaves in November." He further states that the Crag-Martin is certainly stationary in many localities in Northern and Central Italy, and he gives instances of many winter observations.

Dr. Doderlein says that "the Crag-Swallow is not at all rare in Sicily, especially about Messina, Catania, and Syracuse. It arrives before *C. riparia*, and leaves later; but some birds remain all through the winter in the centre of the island, while others seem to arrive in small flocks in December, January, and February, especially during the bright days previous to bad weather, whence the name *Rinnina di malu tempu*."

Mr. Hudleston has stated that near Missolonghi, in Greece, it not only breeds, but spends the winter; and Dr. Krüper states that he was assured by several naturalists that the species is a resident in Greece, but he himself never saw it in winter. He noticed a single pair breeding in the Klissura, and has often found the nest in the Parnassus. In the island of Naxos he also procured two nests, but says that it is rare in the island. Lord Lilford met with the species in Epirus: there are so far no instances of its occurrence in Turkey; but it is included among the birds of Croatia by Professor Brusina, who says that it has not been observed in the interior, but was obtained in June 1891 on the rocks near Fort Mamula in Cattaro, and the Agram Museum also possesses specimens from Rijeka in Montenegro.

Lord Lilford, in his list of the Birds of Cyprus, gives the following note by Dr. Guillemard :—"Only observed on one occasion by me, in small numbers in the Karpas district; found breeding near Kantara in March, and under the caves of the Governor's House on Troodos in April 1888."

According to Canon Tristram, it "resides in all the glens of Palestine throughout the year, not often in large numbers, though in the Jordan valley it is numerous enough to be decidedly gregarious, as it is also in the gorge of the Litany River. It breeds early in March."

The occurrence of the species in Egypt is extremely doubtful. Brehm says that he found it rare in that country; but Von Heuglin states that he never observed it in North-eastern Africa at all, and certainly all the specimens which we have seen from Egypt have been *C. obsoleta*. On the other hand, however, *C. rupestris* does occur in Abyssinia, for Mr. Blanford brought back authentic specimens. Curiously enough, too, he says that it was a "very common" bird in the rocky passes, and found almost from

the sea-level to 8000 feet. Mr. Wyatt met with the Rock-Swallow in company with *C. obsoleta* on the highlands above the Arabah, between Akabah and Petra. He never saw it in the Peninsula of Sinai, where *C. obsoleta* is common.

The Crag-Swallow is apparently found in suitable places throughout Asia Minor; and Mr. C. G. Danford, during his adventurous ride across the country, says that it was "common in rocky neighbourhoods on the plateau and among the mountains." In Southern Russia Nordmann had no proof of its occurrence, but he states that it is found in the province of Ghouriel, and he thinks that it may occur in the Crimea. In the Caucasus it breeds at some elevation on the mountain-steppes and passes, as Mr. Seebohm has written from the notes of Radde and Bogdanoff. Mr. Blanford gives the following notice of the species in his work on 'Eastern Persia':—"I only met with *C. rupestris* on the Persian Highlands, where it was tolerably common, keeping about crags. I found it breeding in a ruined caravanserai at Dehgirdu on June 29th, but I could not get at the nests to see if they contained eggs. They were attached to the vaulted roofs of the cells in the caravanserai. Ménétries found this bird breeding on the mountains of Tálish in June. De Filippi, who met with *C. rupestris* around Demavend in the Elburz mountains, gives as another locality Bandar Abbás, in the Persian Gulf, on the authority of Doria." The latter occurrence probably refers to *C. obsoleta*.

In Central Asia the late Dr. Severtzoff stated that the species breeds in Turkestan, and Dr. Finsch met with it at Lepsa at the foot of the Alatau Mountains. By the late Dr. Russow it was found breeding in the Issander-Kul district, and he also observed it near Baissun in Western Turkestan. Dr. Scully, in his notes on the avifauna of Eastern Turkestan, writes:—"This Crag-Martin was first observed in Eastern Turkestan, in August, between Sanju and Kizil Aghil. After that it was seen every day along the Arpalak stream and the Karakash River. It flew about, hunting over the water, and perched on the high rocks near the streams. At Kizil Aghil I was informed by the inhabitants that this bird left them when the leaves fell off the trees, and re-appeared again in spring when the trees began to blossom; they said that the nests were placed in the clefts of rocks, near the river. The Turki name for this species is *Tagh Karloghach* ('Mountain Swallow'), and I need scarcely add that it was never seen in the plains." The late Dr. Stoliczka, during the Second Yarkand Mission, found the Rock-Martin common in May near Pasrobat, where it was apparently going to breed. He also met with it in Ladak, at Shargol, on the 20th of August, and at Lamaguru on the 23rd; again at Sanju on the 28th of October. Here also Dr. Henderson often saw it, and he noticed it both on the upward journey and on the return on the banks of the Indus near Lé, and it was also numerous about Dràs. In his notes on the birds of the Pamir Range the late Dr. Severtzoff writes:—"Seen on migration late in August. Families of these birds were seen in July near the sources of the Kashgar-Darya and in the mountains of Altai. They probably breed at a lower elevation, and ascend these heights as soon as the young are able to fly." Messrs. Homeyer and Tancré have also recorded the species from the Altai Mountains.

In the Kurrum Valley, in Afghanistan, Major Wardlaw Ramsay found it abundant in June, apparently nesting in the cliffs. Sir O. St. John records it as not uncommon in Southern Afghanistan, and says that he shot it in the Pishin Valley, in the autumn, 6000 feet above the sea. Dr. Aitchison met with the species at Mount Do-shakh in Northern Afghanistan, and Capt. Yate at Darband-i-kil Rekhta, in the Murghab district of Herat, on the 18th of May.

In the Himalayas the Rock-Martin appears to extend throughout the entire range, having been procured by Colonel C. H. T. Marshall in Chamba, and by the late Colonel Pemberton in Bootan. In the Gilgit district Dr. Scully records it as a summer visitor, arriving about the third week in March, when it is very common in the lower valleys throughout April and May. Dr. Jerdon says that he observed it in the valley of the Sutlej and in the Sind Valley of Kashmir. Mr. Hume writes:—"In many of the higher hills south of the Snowy Range it seems to a great extent to be a permanent resident, not at any rate migrating *en masse* from the country, but, as a rule, only retreating lower down the valleys in the cold weather; some few, however, during the latter season are met with in the higher hills of Central India and Rajpootana. On the Neilgheries there appears to be a permanently resident colony." In Nepal, says Dr. Scully, "this Crag-Martin was only noticed on a few occasions in the great valley, but was more common in the Nawakot district and the Markhu Valley in winter. It was always found over mountain streams having high rocky banks."

Colonel Butler states that it is a cold-weather visitant to Mount Aboo, where it is not uncommon, delighting in high inaccessible rocks and generally seen in company with *C. concolor*. Mr. Hume remarks that it is not found anywhere else in Rajpootana, but there is a specimen from Cutch in the Hume collection. Mr. Blanford states that he only saw the species at one spot in the Wardha Valley in Central India, but the Hume collection contains an example from Northern Canara.

The Rev. S. B. Fairbank has found the species on the Mahabaleshwur Hills, and also on Khandala, where Mr. Blanford has also met with it. In the Nilghiris, Mr. Davison says that it is only a cold-weather visitant, never very numerous. He has observed it only in the immediate vicinity of Ootacamund, and always about rocky cliffs. By the end of March all have apparently departed.

Captain Horace Terry has noticed the species in the Palani Hills. "They were flying about some high cliffs near Pittur. They had much the appearance of *P. concolor*, but were lighter coloured on the back, and with some whitish colour on the throat. They kept on flying in and out from under a ledge on the face of the cliff, screaming and chattering at the time; but as the ledge was below me, I could not see whether they had their nests there or not."

Of the nesting of the species in India, Mr. Hume writes:—

"The Crag-Swallow only breeds, so far as I know, amongst precipitous rocks in the Himalayas at heights of from 7000 to 10,000 feet. I once found a number breeding on the road from Mussoorie to Simla, not many miles from the new hill station Chukrata.

This was at the end of April, and I got both eggs and young birds. The nests were composed of pellets of clay, and were mostly rather deep saucers plastered in angles of the cliff under projecting ledges. They were warmly lined both with grass and feathers."

The late General Prjevalski gives the following notes of his observations on the Rock-Swallow:—"Is common in the mountains of S.E. Mongolia and Kan-su. In the latter place they do not ascend as high as the Alpine region. They spend whole days in flying about the rocks where they breed. Their nests are usually stuck to protruding stones, or roofs of small caverns in the rocks. The first migrants arrived at Muni-ul on the 19th of April, and in Kan-su on the 26th of the same month." Abbé David states that he met with the species in all parts of Western China and Mongolia visited by him, and the late Consul Swinhoe records it as common in the mountains near Pekin in Northern China.

The fact that the Rock-Martin lays spotted eggs and builds a nest like a Common Swallow is very interesting, and apparently proves that the species is not a true member of the genus *Cotile*. In Mr. Tait's Portuguese notes he says:—"The flight of this species is extremely graceful—so smooth, silent, and apparently effortless—and I have often watched it with pleasure. Occasionally a bird would seem to turn a somersault, like a Tumbler Pigeon, but with a wider radius and without disturbing its flight. I could never, however, feel quite sure that it was not an optical delusion on my part."

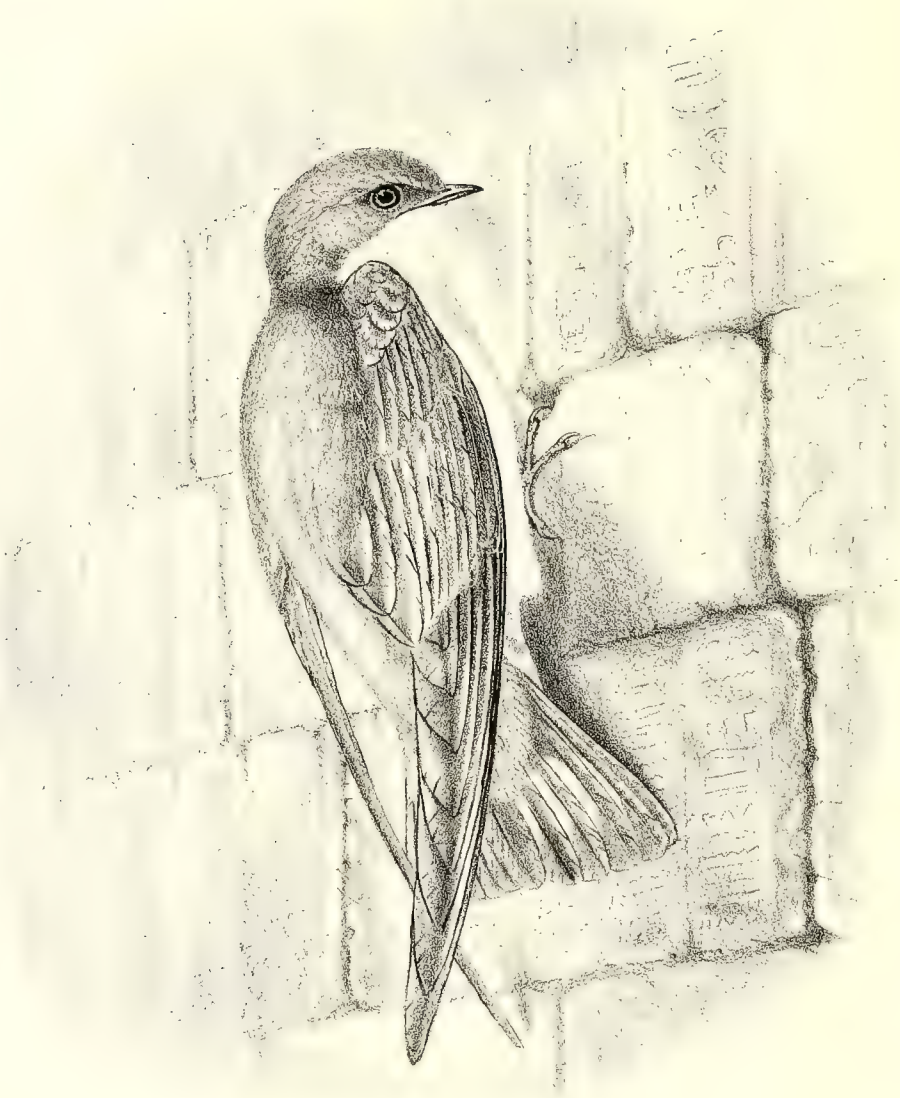
As will be seen by the notes given above, the situations of the nest are very various, as it is found nesting under the eaves of houses, as at Andorra in the Pyrenees, against cliffs, and sometimes even in caves. On Mt. Parnassus, Dr. Krüper found a nest in a small cave where a Chough had a nest also and was feeding her young.

The following interesting account of the species was contributed by Mr. Henry Seebohm to Mr. Dresser's 'Birds of Europe':—

"*C. rupestris* ought rather to be called the Cave-Swallow, than the Crag-Swallow or Rock-Martin, if its name refers to its choice of a breeding-station. So far as I know *C. rupestris* always chooses to nest in caves, with which Greece and Asia Minor abound. In both these countries it is a resident bird, frequenting, Dr. Krüper tells me, the plains and the sea-side in winter. In summer it goes into the mountains to breed; but Von der Mühle and Lindermayer are certainly wrong in saying that it is only seen in the high mountains at this season of the year. We never once met with this bird in the pine-regions of the Parnassus. Below the pines come some two thousand feet of rock and grass before you get into the olive and vine valleys. In this region we only found it very low down, in the most sheltered situations, in the mountain-gorges a short stroll above the level of the vines. These mountain-gorges, like all other limestone districts, abound in caves, which are the favourite breeding-places of this Swallow. On the 10th of May, 1873, I had an excellent opportunity of watching a score or more of these birds hawking for flies on a sunny spot in a deep mountain-gorge in the Parnassus. The sun was shining brilliantly after a heavy storm of wind and rain. The birds were very tame,

and my sitting down on a rock in the midst of them to watch their movements did not appear to disturb them in the least. Their style of flight reminded me very much of that of a butterfly or a bat—a sort of irresolute flutter, very unlike the rapid darts of the true *Hirundo*. They seemed also occasionally to require rest, often perching on the branches of a fallen oak not far from the rock on which I was sitting. They are remarkably silent birds. The only note I heard was an occasional *ch* or *chch*, scarcely likely to attract the attention of any one not listening for it. When I repassed the spot a few hours afterwards not a bird was to be seen. Whenever we descended low enough down into the valleys we met with these birds, but could not discover the least trace of their breeding. In the mountain-gorges there were numerous caves, into which we sometimes saw them fly; but it was not until the 16th May, at Beliza, that we saw any signs of their having begun to build their nests. This little village is built at the entrance of one of the most picturesque gorges in the Parnassus. I strolled out one morning up the gorge, and had not left the village more than five minutes, when I espied a group of Swallows on the ground, round a puddle in the mule-track. I shot into the middle of them, and picked up three specimens of *H. rufula* and one of *Cotile rupestris*. They had evidently commenced to build, as their beaks were full of mud, which they had gone to the puddle to collect. When Dr. Krüper passed through the village a fortnight later, *C. rupestris* had fresh eggs; but very few nests contained the full complement. It is a very unusual thing for a non-migratory bird to breed so late; and it has been suggested by my friend Mr. Howard Saunders, in his interesting papers in 'The Field' on the ornithology of Spain, that the June nests of this bird are for a second brood. I have not, however, nor has my friend Dr. Krüper, been able to find the least evidence in Greece in favour of this theory. In Asia Minor, in 1872, I met with the bird breeding in exactly similar localities, at about the same elevation, in the last week in May. Although more or less gregarious when in search of food they are not so much so in their nesting-habits, and you seldom find more than one or two nests in the same cave. It is a very common thing to see a solitary bird perched for some time upon a ledge in the cave. They prefer those that are lofty, and build near the roof, attaching the nest to the rock immediately below an overhanging projection, but not quite touching it, exactly as *H. rustica* does when it builds against a perpendicular surface. The nest resembles that of the last-mentioned bird in similar positions, being a shallow cup of mud, open at the sides; but it is scarcely so large in size. It is lined with wool, thistle-down, and feathers. The eggs, five or six in number, exactly resemble pale varieties of the eggs of *H. rustica*. The ground-colour is pure white, generally profusely spotted, especially at the large end, with pale greyish brown. Very rarely the spots are irregularly round in shape. They are usually an irregular oval, sometimes running into streaks. The underlying spots are very few and indistinct."

The descriptions are from specimens in the British Museum, and the birds figured are in the same collection.



Mintern Bros. imp.

COTILE OBSOLETA.

COTILE OBSOLETA, *Cab.*

PALE ROCK-MARTIN.

Cotyle rupestris (non Scop.), Rüpp. Syst. Uebers. p. 22 (1845); Vierth. Naum. 1855, p. 471; Heugl. Syst. Uebers. p. 17; E. C. Taylor, Ibis, 1859, p. 47; Adams, Ibis, 1864, p. 14; Hartm. J. f. O. 1864, p. 387; E. C. Taylor, Ibis, 1867, p. 57.

Cotyle obsoleta, Cab. Mus. Hein. Th. i. p. 50 (1850); Heugl. Orn. N.O.-Afr. i. p. 163 (1869); Sharpe, P. Z. S. 1870, p. 301; Shelley, Ibis, 1871, p. 136; id. B. Egypt, p. 123 (1872); Blanf. Ibis, 1873, p. 214; Dresser, B. Eur. iii. p. 521, pl. 165 (1875).

Cotyle cahirica, A. E. Brehm, J. f. O. 1853, p. 452, et Extrah. p. 96; Blasius, Ibis, 1861, p. 295.

Cotyle cachirica, C. L. Brehm, Naum. 1855, p. 271.

Cotyle palustris (nec Steph.), Tristr. Ibis, 1867, p. 363; Wyatt, Ibis, 1870, pp. 2, 9, 12.

Cotyle paludicola (nec V.), Tristr. Ibis, 1869, p. 436.

Cotile obsoleta, Gray, Hand-l. B. i. p. 74, no. 876 (1869); Hume, Str. F. 1876, p. 40; Sharpe, Cat. Birds in Brit. Mus. x. p. 111 (1885); Yerbury, Ibis, 1886, p. 14.

Ptionoprogne pallida, Hume, Str. F. 1873, pp. 1, 417; Blanf. Ibis, 1873, p. 214.

Cotyle (*Ptyonoprogne*) *obsoleta*, Blanf. East. Pers. ii. p. 217 (1876).

Ptyonoprogne obsoleta, Hume, Str. F. 1879, p. 84; Butler, Cat. B. Sind &c. p. 13 (1879).

C. minor, pallida; rectricibus albo maculatis, duabus mediis et extimis exceptis; subcaudalibus saturatè brunneis; subtùs pallidè isabellina, abdomine saturatiore brunneo; gulâ haud maculatâ.

Hab. in Africâ septentrionali-orientali, in Arabia et in Palæstina et per terras littorales Oceanæ Indicæ usque ad provinciam Sindianam.

Adult. Above very pale greyish brown, dark on the head and nape; wing-coverts and quills darker brown, with light edgings to the feathers; rump and upper tail-coverts very pale greyish brown; tail-feathers light greyish brown, with a white spot on the inner web of all the feathers except the two middle and the outer ones; chin whitish, unspotted; throat and breast white, with a very faint fulvous tinge; under tail-coverts darker greyish brown, with faint edgings of pale brown; axillaries pale brown; under wing-coverts a little darker brown, with rufescent margins: "bill black; legs brown; iris dark brown" (*G. E. Shelley*). Total length 5 inches, culmen 0·35, wing 4·5, tail 2·1, tarsus 0·4.

Of a pair of specimens from Palestine the measurements are given in the 'Catalogue of Birds' as follows:—

		Total length.	Wing.	Tail.	Tarsus.
		in.	in.	in.	in.
a. ♂ ad.	Mt. Quarantania (*H. B. Tristram*)	4·8	4·55	2·00	0·35
b. ♀ ad.	Engedi (*H. B. Tristram*)	4·9	4·55	2·15	0·40

These dimensions may be compared with those given by Mr. Hume of his series from Sind (*l. c.*), as follows:—"The sexes do not differ in size, though individuals differ in each sex considerably. The males (seven of each sex were preserved) varied in length from 5·35 to 5·6 inches; expanse 12·25 to 13 inches; wing 4·4 to 4·7 inches. In the females, the length varied from 5·25 to 5·5 inches; expanse 12·3 inches; wing 4·5 to 4·75 inches. In both sexes the tail measures about 1·8 inch from vent. The wings, when closed, exceed the tail by a little more than 0·5 inch, and the weight was a trifle over 0·5 oz. The bill was black and the legs and feet horny brown."

A good deal of difference is noticeable in the colour of the underparts in a series of this Martin, some specimens being rufescent and darker below. These are probably in fresher plumage, as the feathers apparently bleach a good deal with the sun and exposure. Mr. Dresser believes these to be younger birds. They do not show any pale edgings to the feathers, such as usual in a *Cotile*, and we think it probable that they are merely individuals whose plumage has not got bleached.

Hab. North-eastern Africa, Arabia, Palestine, and the shores of the Indian Ocean as far as Sind.

This is a smaller species than *C. rupestris*, with which it has often been confounded. Besides the lesser dimensions, it may also be distinguished by its very pale colour and uniform throat, the latter being spotted in *C. rupestris*.

Von Heuglin states that it is a resident in Egypt, Nubia, and Abyssinia, occurring as well on the Arabian coast and in the mountains of Sinai. He writes:—"It lives among the bare rocky walls and old graveyards, both near the sea and high up near the region of snow. In Semien we shot it at a height of between 11,000 and 12,000 feet above the sea-level. Its flight resembles that of an arrow and is generally straight, though sometimes whirling and uneven, at times low down over the desert, and at other times so high in the air as to disappear from sight altogether. The pale colour of this active and restless bird, amid the glaring sunlight, which is sometimes truly dazzling, makes it appear to vanish suddenly, as if dissolving in mist. The breeding-season is at the beginning of the year. The nest is small and constructed of sand and clay cemented with saliva. We found them breeding in ravines, stone-quarries, catacombs, sepulchral monuments, and isolated buildings in the desert."

Captain Shelley, in his 'Birds of Egypt,' observes:—"This species of Crag-Swallow is very plentifully distributed throughout Egypt and Nubia, where it is a resident. It only frequents the rocky districts, and is therefore of rare occurrence in the Delta, although at Cairo and the Pyramids it is abundant. It may be easily recognized by the paleness of the colouring of its back. It begins to breed about the middle of February, placing its nest under the shelter of an overhanging rock, or attaching it to the ceiling of some of the less-frequented passages of the ruined temples, or even occasionally in the native

dwellings. The eggs of this species are white, spotted with rufous brown, and are very like those of *Hirundo rustica*." Mr. E. Cavendish Taylor found a nest on the 25th of January in the grottoes of Beni-Hassan, containing two eggs nearly ready to hatch. This is an earlier date than that given by Capt. Shelley.

The British Museum contains specimens collected by Sir Samuel Baker up the Nile, and by Mr. Francis Galton at the Fifth Cataract. The late Marquis Antinori did not meet with the species actually in Shoa, but he procured specimens at Zeila, in the Gulf of Aden. At Aden itself, Mr. Wyatt noticed it flying over the "Tanks;" and Major Yerbury, in his essay on the birds of that locality, says:—"A Crag-Martin is with us all the year round and breeds in the caves." He sent a specimen to the British Museum.

Mr. Wyatt often saw the species when on the Sinai survey. It was common on the lowlands in the winter; and towards the end of February, when spring in the desert may be said to commence, it ascended the mountains, where it was seen hawking for flies over the "retem" bushes, which are in full blossom at that time of the year. In April he met with it in Wady Ithm, along the highlands of Edom, between Akabah and Petra.

Canon Tristram found it in Palestine, where it is "entirely confined to the Dead Sea basin, in which it is sedentary. Round the sea itself it is the only species, but at the north end it mingles with *C. rupestris*, and they both breed in the same caves in Jebel Quarantania. It is essentially a desert species, as *C. rupestris* is a mountain one. In habits it differs from its congener, sweeping the desert plains rather than soaring over the mountain cliffs."

Turning eastwards, we next find the species at Fao, in the Persian Gulf, whence Mr. W. D. Cumming has sent specimens to the British Museum.

Mr. Blanford obtained this Martin at Pasin and Gwádar on the Mekran coast; and the Hume collection also contains specimens from the Mekran coast, from Khoce Batt and Gwádar, collected in January and February. Mr. W. T. Blanford found it common throughout Baluchistan; but he never saw it on the Persian highlands, where, he says, it appeared to be entirely replaced by *C. rupestris*.

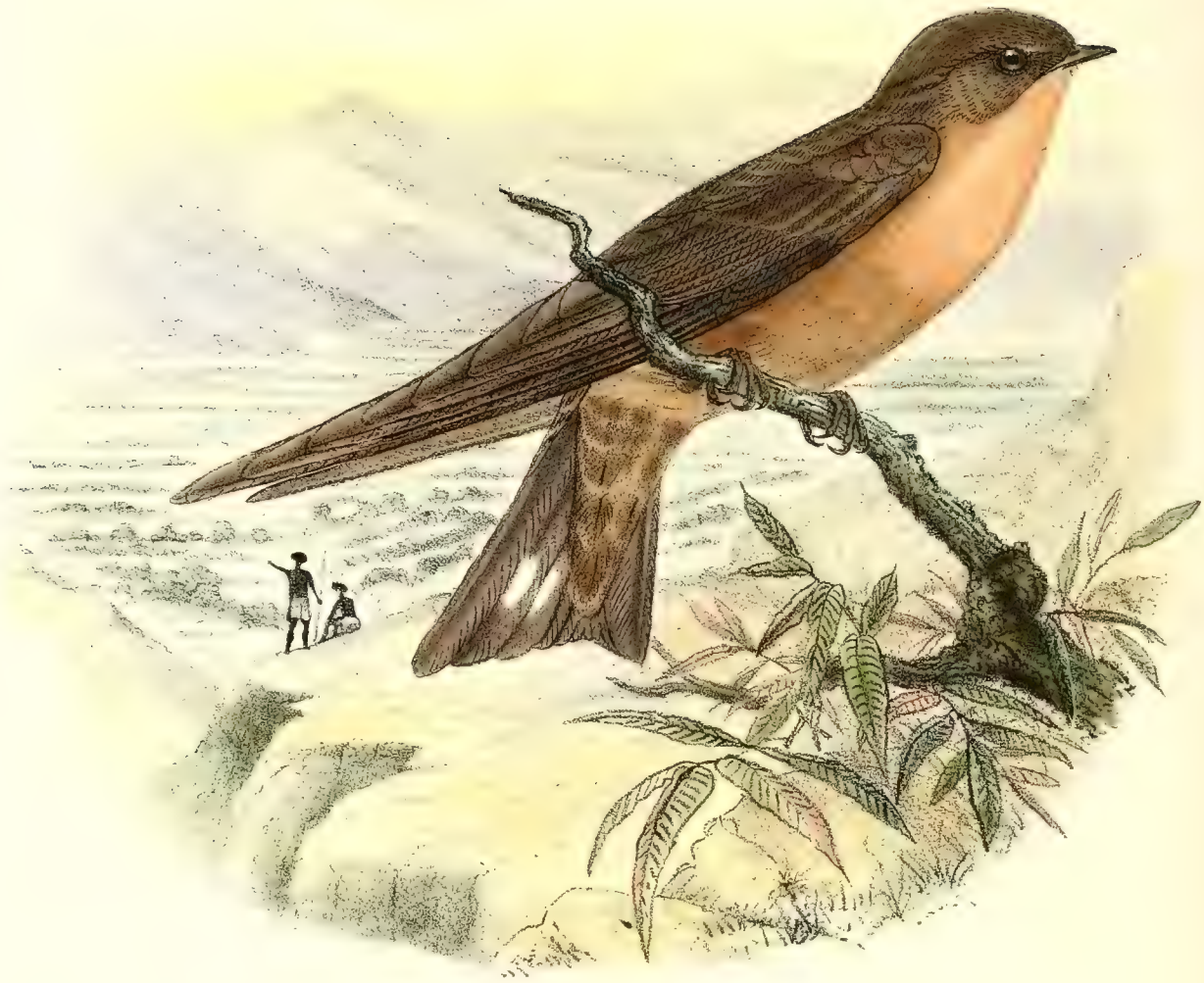
The birds from Sind were named *C. pallida* by Mr. Hume, but Mr. Blanford, having compared his specimens from Sind and Baluchistan with others from North-eastern Africa, established their identity. Mr. Hume was, however, the first to publish the occurrence of this species in Sind. He "found it very common along the Gaj, the Nurrinai, and other small streams that issue from the bare stony hills that divide Sind from Khelat." He met with it again, with the Common Swift, off the headland of Minora, at the mouth of the Kurrachee harbour, and in similar localities along the Mekran coast. Colonel E. A. Butler, whose beautiful specimens from Kurrachee are in the Hume collection, records it as "a cold-weather visitant to Sind, where it is not uncommon along the coast. It is also met with in Cutch."

The Hume collection also contains a male obtained by Sir Oliver St. John near Kandahar, on the 3rd of May, 1880.

Mr. Blanford observes:—"*C. obsoleta* is far from being so thorough a Crag-Martin

as *C. rupestris*. I have often met with it about hills, but, I think, more frequently still in the neighbourhood of the broad stream-beds, usually dry, which intersect the desert plains of Baluchistan, but which, from containing more vegetation than the surrounding country, afford a larger quantity of insect food to Swallows and Martins. *C. obsoleta* was very common in December and January along the sea-shore. I did not see much of it in its breeding-haunts, though the birds at Kalagán and Jálk in March were in pairs, hunting about particular spots, as if building nests, and the males which I dissected had enlarged testes. They doubtless breed on rocks like their allies."

The specimen described is an Egyptian one in the British Museum. The bird figured is also from Egypt, and is in Captain Shelley's collection.



C W W del

Mintern Bros imp.

COTILE FULIGULA

COTILE FULIGULA (*Licht.*).

RUFOUS-THROATED ROCK-MARTIN.

L'Hirondelle fauve, Levaill. Ois. d'Afr. v. p. 156, pl. 246; Sundev. Krit. Framst., Levaill. p. 52 (1857).

Hirundo fuligula, Licht. in Forst. Descr. Anim. p. 55 (1844); Grill, Zool. Anteckn. p. 36 (1858).

Hirundo hyemalis, Forster, Descr. Anim. p. 55 (1844).

Cotyle fuligula, Gray, Gen. B. i. p. 60 (1845); id. Cat. Fissir. Brit. Mus. p. 29 (1848); Bp. Consp. i. p. 342 (1850); Cab. Mus. Hein. Th. i. p. 164 (1850); Hartl. J. f. O. 1861, p. 103; Gurney, Ibis, 1865, p. 264; Layard, B. S. Afr. p. 57 (1867); Sharpe, P. Z. S. 1870, p. 299 (pt.); id. Cat. Afr. B. p. 45 (1871); Shelley, Ibis, 1875, p. 68; Ayres, Ibis, 1876, p. 424, 1878, p. 407, 1879, p. 291; Salvin, Cat. Strickl. Coll. p. 153 (1882); Butler, Feilden, & Reid, Zool. 1882, p. 250; Sharpe, ed. Layard's B. S. Afr. p. 360 (1883).

Cotile fuligula, Gray, Hand-l. B. i. p. 73, no. 874 (1869); Sharpe, ed. Layard's B. S. Afr. p. 840 (1884); id. Cat. Birds in Brit. Mus. x. p. 106 (1885).

C. major; rectricibus albo maculatis; subcaudalibus saturatè brunneis; gulâ et præpectore clarè rufescentibus.

Hab. in Africâ meridionali.

Adult male. General colour above dark sooty brown, the head slightly more dusky than the back; wing-coverts and quills darker brown than the back, the inner greater coverts and scapulars of the same sooty brown as the back; tail-feathers dark brown, all but the two centre feathers and the outermost with a large round white spot on the inner web; lores blackish; ear-coverts and sides of neck dark sooty brown like the back; throat and breast tawny rufous, extending over the abdomen; sides of breast, flanks, abdomen, and under tail-coverts dark sooty brown; axillaries and under wing-coverts rufous, with sooty-brown bases, causing a mottled appearance near the edge of the wing; quills sooty brown below, paler along the inner web: "bill black; legs brown; iris brown" (*T. L. Ayres*). Total length 5 inches, culmen 0·4, wing 5·05, tail 2·1, tarsus 0·45.

Adult female. Similar to the male in colour. Total length 5·4 inches, culmen 0·4, wing 5, tail 2·15, tarsus 0·45.

Young. Only differs from the adult in having rufous edgings to the feathers of the upper parts, lower abdomen, and under tail-coverts.

Hab. South Africa, from the Cape Colony to Natal and the Transvaal.

There are four races of these dark rufous-throated Rock-Martins, of which *C. fuligula* is the largest, *C. anderssoni* a pale form from S.W. Africa, *C. rufigula* is a lesser East-African form, and *C. concolor* a still smaller Indian representative.

Cotile fuligula, from its habits as given by Mr. Layard, and from what we know of its Indian cousin *C. concolor*, belongs to the group of Rock-Martins of which *C. rupestris* is the typical form, as distinguished from the Sand-Martins, of which *C. riparia* is the type; and should characters for the separation of the genus *Ptyonoprogne* be found, the present species would come under that heading, and be known as *P. fuligula*.

The first notice of this species appears to be in Levaillant's 'Oiseaux d'Afrique,' where it is figured, but no scientific names appear to have been bestowed upon it till 1844, when Lichtenstein gave it that of *fuligula*, which is in all probability a misprint for *fulvigula*. Forster's title of *hiemalis* was first published in the same year by Lichtenstein, in his edition of the 'Descriptiones Animalium.'

Mr. E. L. Layard, writing from Cape Town, says:—"This Swallow remains with us all the year round, merely shifting its quarters from a town to a country residence. As soon as our summer visitants are gone, these crowd into the villages and take their places. We have counted upwards of one hundred sitting together on the cornices of the Dutch Church in Cape Town on a cold day, basking in the sun. They breed in the mountains and seem generally distributed, as we have received specimens from Damara Land, Swellendam, Beaufort, and Colesberg; and Victorin procured it at the Knysna. We have also found them nesting under the eaves of houses in November. They lay three or four eggs, of a creamy white, much spotted with brown, with here and there a grey patch; in some these spots seem to form a circle at the obtuse end: axis 10‴, diameter 6‴. The flight of this species is very slow and sailing, and they seek their prey usually near rocks, and are more crepuscular in their habits than any of our other species, often flying so far into the darkening twilight, that they can scarcely be distinguished from the Bats with which they mingle. Mr. H. Jackson writes from Nel's Poort, on the 4th of January, 1869:—'We have taken the eggs of a pair of Brown Martins five times this season. They have their nests against the gable of my house and do not forsake it when robbed, as do the Chats and others.'"

According to the late Dr. Bradshaw, it remains throughout the year on the Orange River, where it is most numerous near rocky hills, nesting under overhanging rocks. He found a few pairs also breeding near Renhardt. Majors Butler and Feilden and Capt. Reid, in their paper on the birds of Natal, state that it is a familiar species in the upper part of the colony, breeding in October and November. We saw beautiful specimens collected by Major Butler in the neighbourhood of Newcastle, and we have received a specimen from our excellent correspondent Mr. T. L. Ayres, from Pinetown in Natal, where it would appear to be decidedly rare.

Although it reaches the Transvaal, and has been shot near Potchefstroom in January by Mr. T. Ayres, the latter naturalist considers it to be one of the scarcest of the Swallows

in those parts, although it is more common in the Rustenberg district of the eastern Transvaal.

The species has been recorded from Damara Land; but after a closer examination of the specimen in the British Museum from that country we have come to the conclusion that the Rock-Martin of South-western Africa is different from the true *C. fuligula* of the Cape Colony, and we have described it as distinct.

The description is taken from specimens in Captain Shelley's collection, obtained by Major Butler near Newcastle, and from one of these the figure in the Plate has been drawn.

COTILE ANDERSSONI, sp. n.

ANDERSSON'S ROCK-MARTIN.

Cotile fuligula (nec Licht.), Bocage, Jorn. Lisb. 1868, p. 40, 1872, p. 67; Gurney in Andersson's Birds of Damara Land, p. 52 (1872); Bocage, Orn. Angola, p. 187 (1881).

Cotile fuligula (pt.), Sharpe, Cat. Birds in Brit. Mus. p. 106 (1885).

C. similis *C. fuligulæ* sed pallidior: suprà pallidè murina, et subtus vix rufescens.

Hab. in Africâ occidentali-australi.

Adult female. Similar to *C. fuligula*, but very much paler, the upper surface and the sides of the body being a pale ashy mouse-colour, and the rufous colour on the throat very pale: "bill brown, upper mandible darker than the lower; legs and toes brown; iris very dark brown" (*C. J. Andersson*). Total length 5·8 inches, culmen 0·4, wing 5·05, tail 2·15, tarsus 0·45.

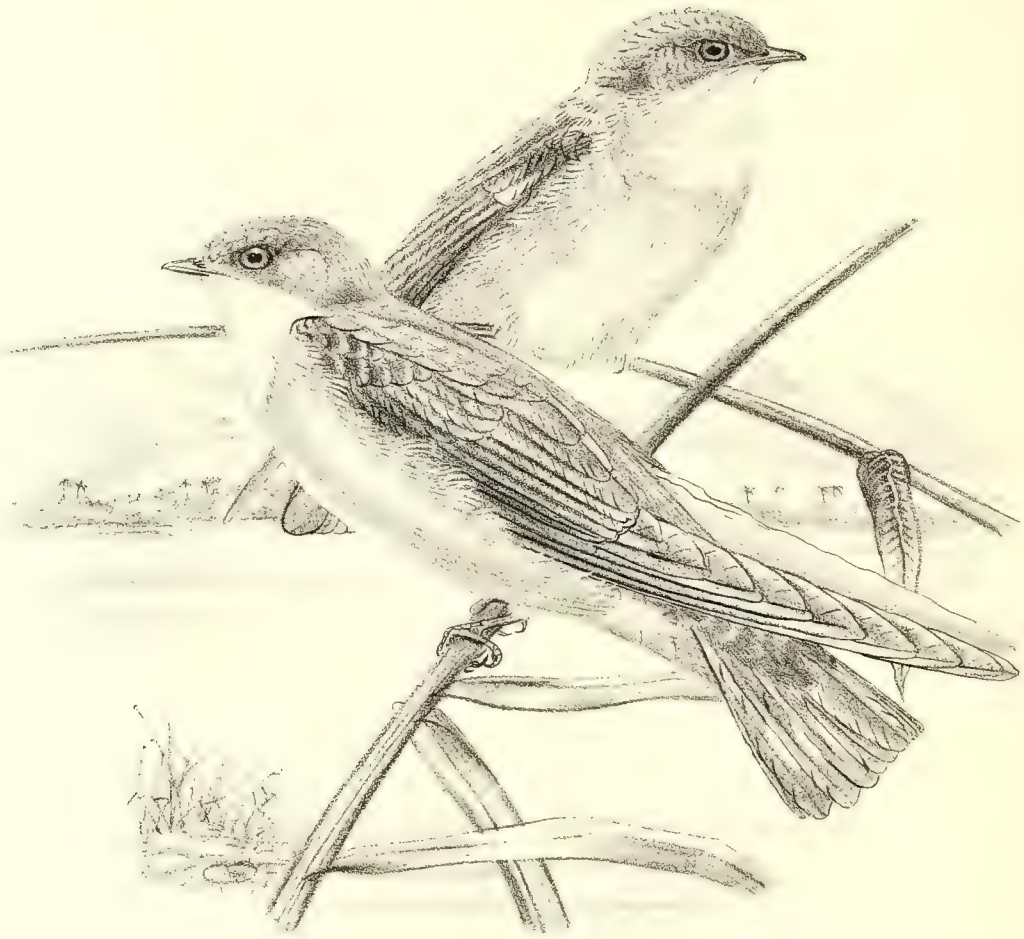
Hab. Damara-Land and Mossamedes.

The receipt of a larger series of the true *C. fuligula* than was at our disposal some time ago shows that the form from the Cape Colony and Natal is uniformly darker than the one from Damara Land, and the intensely pale coloration of the latter has induced us to describe it as a distinct race, to which we have attached the name of Mr. C. J. Andersson, the intrepid traveller, to whose exertions nearly all our scientific knowledge of this part of the world is due.

Mr. Andersson gives the following note on this bird:—"This Martin is common in Damara and Great Namaqua Land, and is the only species of Swallow which remains throughout the year, a few couples being always to be found in suitable localities. I once saw a very large number at Hykomkap, on the 20th of May. This species breeds in the holes of low rocks and clay-banks. The nest is cup-shaped, and built of the usual clay materials; the eggs are five or six in number, white, tinged with fawn, and spotted with brown."

Senhor Anchieta has met with this Martin at the Rio Coroca and at Biballa in the interior of Mossamedes, as we have no doubt that it is the pale Damara form which occurs here also. At Biballa he says it is called 'Kapiapia.'

The description and measurements are taken from the typical specimen in the British Museum.



C.W.W. del

Mintern Bros imp

COTILE RUFIGULA.

COTILE RUFIGULA, *Fischer & Reichenow.*

FISCHER'S ROCK-MARTIN.

Cotyle fuligula (nec Licht.), Horsf. & Moore, Cat. Birds E. I. Co. Mus. i. p. 96 (1854); Heugl. Orn. N.O.-Afr. i. p. 164 (1869); Blanf. Geol. & Zool. Abyss. p. 350 (1870, sub *C. rupestris*); Sharpe, P. Z. S. 1870, p. 299 (pt.).

Cotile rufigula, Fischer & Reichen. J. f. O. 1884, p. 53; Sharpe, Cat. Birds in Brit. Mus. x. p. 107 (1885).

Cotyle rufigula, Salvad. Ann. Mus. Civic. Genov. (2) i. p. 122 (1884); Fischer in Madarász, Zeitschr. ges. Orn. i. p. 358 (1884).

C. similis *C. fuliguleæ*, sed multò minor et gulâ pallidiore distinguenda.

Hab. in Africâ orientali et septentrionali-orientali.

Adult male. General colour above dark mouse-brown; wing-coverts like the back; bastard-wing, primary-coverts, and quills darker brown, somewhat lighter brown on the edges; upper tail-coverts like the back; tail-feathers dark brown, every feather marked with a rounded spot of white on the inner web, excepting the two centre ones and the outer one on each side; crown of head a trifle darker than the back; lores blackish; ear-coverts dark brown like the head; cheeks, throat, and fore neck pale fawn-rufous; chest, breast, and abdomen a little deeper rufous-brown, dark mouse-brown on the sides of body and flanks; thighs, under tail-coverts, under wing-coverts, and axillaries dark mouse-brown, the under wing-coverts edged with dull rufous; quills below more ashy along the inner webs. Total length 5 inches, culmen 0·3, wing 4·8, tail 2·0, tarsus 0·4.

The wing measures from 4·6 to 4·85 in the five specimens in the British Museum; but too great reliance cannot be placed on these dimensions, as the specimens have the plumage very much worn, though it will be seen that they never attain to the dimensions of *C. fuligula*.

Hab. North-eastern Africa from Abyssinia to Shoa and thence to Masai-land in Eastern Africa.

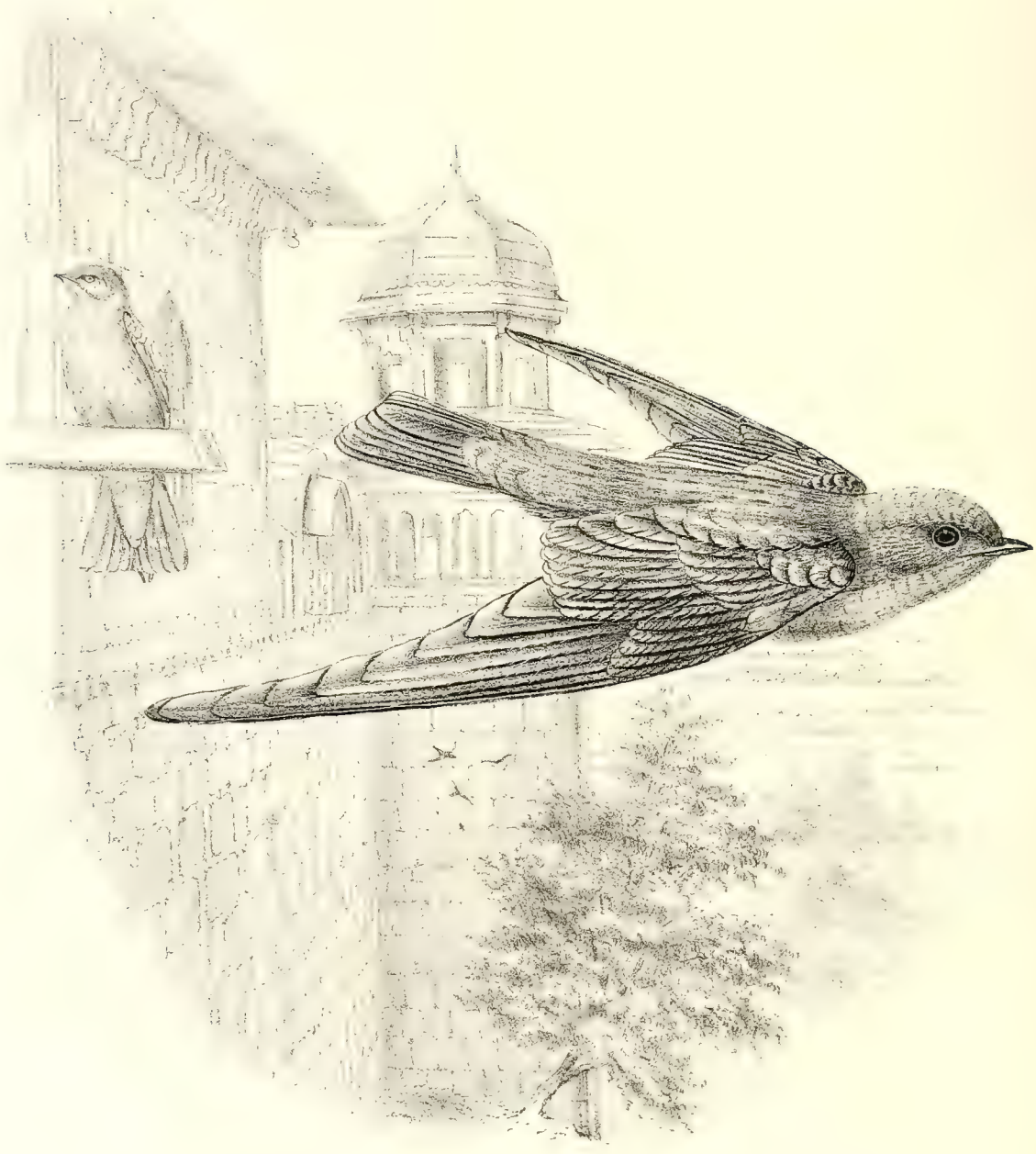
The earliest recorded specimen of the present species seems to be the one mentioned in Horsfield and Moore's 'Catalogue,' where a single bird is said to have been obtained by Sir W. C. Harris in 'Abyssinia.' As a matter of fact, four specimens were obtained by the last-named naturalist, though only one was catalogued. All four examples are now preserved in the British Museum, and it is extremely doubtful if any of them really came from Abyssinia, as the only bird with the original label still attached to it was collected in Shoa, at Angollala, in May 1842.

That it occurs in Abyssinia proper is, however, certain, for in the British Museum is a specimen collected by Mr. Jesse, though without any indication of the precise

locality. A bird obtained by the same gentleman at Rayrayguddy is in Capt. Wardlaw Ramsay's collection, and was referred by us in 1870 to *C. rupestris*. In those days we were inclined to regard *C. rufigula* as a small northern form of *C. fuligula*, and did not attach a name to it; but as it has since been named by Drs. Fischer and Reichenow, it is as well to recognize it under their title. It cannot, however, be considered more than a race of *C. fuligula*, intermediate between that species and *C. concolor* of India. All references to *C. fuligula* in North-eastern Africa doubtless refer to the present bird.

The late Marquis Antinori, during the Italian expedition to Shoa, procured a specimen at Mahal-Uonz on the 30th of April. Besides the above-mentioned habitats of this Rock-Martin, it has also been noticed by the late Dr. Fischer at the Naiwascha Lake in Masai-land. Here he met with it in rocky ravines on the south-eastern shore of the lake, where it was noticed in small numbers flying over the surface of the ground and swooping upwards to the steep rocks, where the birds had their nests.

The specimen described is in the British Museum, and the example figured was procured by Antinori in Shoa, and sent by Count Salvadori to the authors for identification. Having been preserved in spirit, the colours are rather bleached. The appearance of the examples in the Museum is decidedly darker.



J.W.W del

Mintern Bro's. imp

COTILE CONCOLOR

COTILE CONCOLOR (*Sykes*).

DUSKY ROCK-MARTIN.

Hirundo concolor, Sykes, P. Z. S. 1832, p. 83; Jerd. Madr. Journ. xi. p. 238 (1840); Gray, Gen. B. i. p. 58 (1845); Blyth, J. A. S. Beng. xvi. p. 119 (1847); id. Cat. B. Mus. As. Soc. p. 199 (1849).

Biblis concolor, Less. Compl. Buff. viii. p. 495 (1837).

Cotyle concolor, Boie, Isis, 1844, p. 170; Bp. Consp. i. p. 342 (1850); Cass. Cat. Hirund. Mus. Philad. Acad. p. 12 (1853); Horsf. & Moore, Cat. B. E.I. Co. Mus. i. p. 97 (1854); Jerd. B. Ind. i. p. 165 (1862); Blanf. Ibis, 1867, p. 463; id. J. A. S. Beng. xl. p. 271 (1871); Butler, Str. F. 1877, p. 227.

Cotile concolor, Gray, Hand-l. B. i. p. 73, no. 873 (1869); Aitken, Str. F. 1875, p. 214; Butler, t. c. p. 453; Hume, t. c. p. 453; id. Str. F. 1876, p. 35; Sharpe, Cat. Birds in Brit. Mus. x. p. 108 (1885).

Ptyonoprogne concolor, Hume, Nests and Eggs Ind. B. p. 83 (1873); Adam, Str. F. 1873, p. 370; Fairb. Str. F. 1876, p. 254; Davids. & Wenden, Str. F. 1878, vol. ii. p. 77; Hume, Str. F. 1879, p. 84; Butler, Cat. B. Sind &c. p. 13 (1879); id. Cat. B. S. Bomb. Pres. p. 14 (1880); Vidal, Str. F. 1880, p. 43; Davison, Str. F. 1883, p. 346.

Krimnochelidon concolor, Tickell, MSS.; Walden, Ibis, 1876, p. 356.

C. minor; similis *C. fuligulæ*, sed gulâ maculatâ distinguenda.

Hab. in peninsula Indicâ.

Adult male. General colour above uniform dark sooty brown; wing-coverts like the back, the bastard-wing, primary-coverts, and quills dark brown, externally washed with the same brown as the back; tail-feathers dark brown, with a white spot on the inner web of all but the two centre feathers and the outer one on each side; head like the back; lores, sides of face, ear-coverts, and cheeks uniform dark brown, with a few fulvous streaks only on the cheeks; throat and chest dull rufescent, streaked with dusky brown, the feathers being mesially centred with this colour; breast, abdomen, flanks, and under tail-coverts uniform dark sooty brown, with a few of the feathers of the abdomen paler edged; axillaries and under wing-coverts dark brown with rufous edges; quills dusky brown below: "bill black; legs and feet brownish plumbeous or purplish brown; iris blackish brown" (*E. A. Butler*): "legs and feet pale fleshy brown" (*W. Davison*): "inside of mouth light yellow" (*C. T. Bingham*). Total length 4·8 inches, culmen 0·35, wing 4·05, tail 1·85, tarsus 0·35.

The dusky spots or streaks on the throat, which are very evident in the living bird, are often invisible in skins, the throat and fore neck being quite uniform in some specimens. Sometimes also a trace of a white spot can be found on the outer tail-feather and occasionally on the centre ones.

Adult female. Similar in colour to the male. Total length 4·3 inches, culmen 0·3, wing 4·1, tail 1·6, tarsus 0·35.

Young. Is distinguished from the adult by having pale rufous edges to the feathers of the lower back, rump, and upper tail-coverts.

Hab. The greater part of the Indian Peninsula from the Nilghiri Hills northward to Kathiawar and Cutch on the west, and extending northwards to Delhi, but apparently not crossing the Ganges, nor visiting Lower Bengal.

This is the Indian representative of the African *C. fuligula*, of which it is a small race. It differs chiefly in its size, and also in the spotted throat; but, as we have noticed above, the throat and fore neck are sometimes quite uniform, and then there would be nothing but the smaller dimensions of the Indian bird wherewith to distinguish it.

The present species is widely distributed over the Peninsula of India, but does not extend to Ceylon, nor does it reach Lower Bengal. It is not included in any list of birds from Travancore, and its most southerly range seems to be the Nilghiri Hills. Here, Mr. Davison says, it is "not uncommon during the cold weather, but very few remain to breed. It is only found about rocky places, or their immediate vicinity. It occurs from the level of the plains to as high up as Ootacamund." Dr. Jerdon writes:—"I rarely saw it on the Malabar coast, but I procured it at Vellore and Seringapatam, in both places breeding on the large fort walls; also on rocky hills throughout the Carnatic and table-land, and in Central India. I have also found its nest on a rock overhanging the road on the Goodaloor Ghât of the Neilgherries, at about 4000 feet of elevation. It also breeds occasionally in the eaves of lofty houses, and other large buildings in the Deccan, as I saw at Jaulna. It does not build in company, and is nowhere abundant in individuals."

Major Butler procured specimens at Belgaum in July, and these are in the Hume collection. He considers it to be a permanent resident and common, as a rule, throughout the southern Bombay presidency. Messrs. Davidson and Wenden, in their paper on the birds of the Deccan, whence came the original specimens described by Col. Sykes, write:—"In the Sholapoor districts it breeds in abundance in the rains and in February. At Egutpoora it was breeding in the verandah of the Engineers' bungalow in the middle of March and first week in August. Procured at Lanoli on the 20th of March." In the South Konkan Mr. Vidal has procured specimens at Bankot, Kelshi, Harnai, Pévé, Guhágar, and Ratnágiri. He says it is "common on the coast, and for a few miles inland. I have found nests on the cliffs in February, March, and April, and under the eaves of a bungalow in August." The Hume collection contains a specimen from Panchganj Ghat in the Mahabaleshwur Hills, procured in June 1874, and Mr. Fairbank says that it is common in the neighbourhood of Khandala. Mr. Sharpe noticed it on the island of Elephanta, where he saw a specimen clinging to the arch which forms the entrance to the celebrated rock-temple. Colonel Swinhoe and Lieut. Barnes state

that it "is common at Mohw, where it is a resident, breeding during February and March, and again in October and November."

Mr. Aitken's notes on the breeding of the species in Berar are given below, and Mr. W. T. Blanford also found it nesting, though local, in the Wardha valley.

The birds from the north-west are decidedly paler than those from more eastern and southern localities. This is certainly the case with those from Mount Aboo in the Hume collection. Colonel Butler states that in the neighbourhood of Aboo and Northern Guzerat the majority of the birds disappear in the hot weather, though a few are found all the year round. He says it is "common in the hills, breeding at Mount Aboo in June and July. It is not so common on the plains. In the neighbourhood of Deesa it breeds in August and September, building an open nest like *H. rustica*, which it fixes to the wall under the eaves of houses, and laying two or three eggs."

The northward range of the species is marked by specimens in the Hume collection from Saugor. Colonel G. F. L. Marshall obtained it in Bundelkund, and the Hume collection also contains a specimen from Lulutpur in the North-west Provinces. At Chunar Mr. Brooks procured a breeding pair in June and took the eggs. Jerdon noticed it near Allahabad, and Mr. Hume met with it at Etawah, specimens killed in February, July, and October being in his collection. Both the authors have observed it near Agra, and Mr. Sharpe saw a considerable number about Ukbur's Palace at Futtehpur Sikri. It extends at least as far north as Delhi, where Capt. Bingham procured specimens.

In the vicinity of the Sambhur Lake, Mr. R. M. Adam says that it is not common; he only obtained the species near Mata Pahar and the extreme western portion of the lake. Mr. Hume, during one of his visits to this place, found a nest with three eggs; the latter gentleman also met with it at Jodhpur in Rajputana, and Colonel Butler has obtained specimens from Mount Aboo and Deesa. It also extends to Cutch, whence there is a specimen in the Hume collection. Major Hayes Lloyd says that it is occasionally met with in Kathiawar; and a pair built their nest against the rafters of his house at Rajkote. The specimen given by him to the British Museum belongs to the dark form, such as is found in the Mahabaleshwur Hills and at Belgaum.

Mr. James Aitken gives, in his paper on the Swallows and Swifts of Berar, the following account of the present species:—"The natural habitat of this Swallow is amongst rocks and on the faces of cliffs, and in such situations it may always be found; but it readily avails itself of the windows and porches of houses, even nesting among the two-storied houses in native towns. I have also known it make its nest on the side of a well. The nest is open all round, merely attached to the wall by one side, and is very neatly lined with feathers. The eggs are more round than any of our other Swallows, and are minutely speckled with brown, especially about the thick end; the usual number is, I think, three. They are persecuted while building and occasionally driven away by the Sparrows; but their open nest not being adapted to the wants of these birds, they do

not take possession of it. Though capable, from their length of wing, of great speed, they are no travellers, but may generally be found flying about their chosen cliff or building in a very leisurely manner; the young continue about the spot for some time, but I never saw the old ones feed them upon the wing after the manner of the Wire-tailed Swallows."

The accompanying notes are taken from Mr. Hume's 'Nests and Eggs of Indian Birds':—

"The Dusky Crag-Martin breeds at least twice a year. In the plains of India I have mostly found the eggs in January, February, and July, but I have seen them in April; and writing from the Nilghiris, Miss Cockburn says:—'These small Crag-Martins build in the months of April and May. One nest was constructed in a small cave which had been dug out of the earth where some pretty ferns and moss were growing; I admired the Martins' choice of a site for the abode of their young during the few weeks they might require a dwelling-place. The nest was of clay and of a cup-shape, lined with many feathers, and had two white eggs with minute dark spots all over them, but particularly at the thick end.'

"The nest is solitary, very like the Wire-tailed Swallow's, but deeper and smaller, coming to a well-defined point below; it is lined with feathers.

"Mr. F. R. Blewitt says:—'This species breeds in both the cold and hot seasons, though I have obtained most eggs in July and August. It has its nest in holes of walls, on projecting eaves, and sometimes on the ledges of rocks, where convenient shelter is afforded.'

"'The nest-lining is composed of soft flowering grasses and feathers, the latter forming, as it were, the inner lining. The regular number of eggs appears to be four. Strictly speaking, it does not breed in company, though at Talbehut I have seen two and three pairs together, occupying as many holes in the old fort wall, near to each other. Doctor Jerdon justly remarks of this Martin that it is scattered sparingly. I have found it only in the vicinity of old forts and mosques, and but few in number. When flying, or rather while feeding on the wing, two and three together, they alternately chirrup to each other. It is a *chit, chit, chit*, rapidly uttered in a soft melodious tone.'

"Mr. R. Thompson writes to me that in the Central Provinces the majority, he thinks, breed in March and April, but certainly, in Jhansie and Saugor, January and July are the months.

"The eggs of this species are intermediate between those of *L. fluvicola* and *H. filifera* (*H. smithii*), so far as the character, extent, and intensity of markings go. The ground-colour is white, and they are all more or less thickly speckled, spotted, and, at times, though rarely, blotched with different shades of yellowish and reddish brown. Unlike those of *L. fluvicola*, which are as often pure white as not, these eggs are always pretty thickly marked; but these markings, though better defined and darker than those of *L. fluvicola*, are neither so bold nor so bright as in *H. filifera*. As in both these species,

the markings are always most dense towards the broad end, where a more or less ill-defined zone or irregular and partial cap are not uncommon. In length they vary from 0·68 to 0·75 inch, and in breadth from 0·5 to 0·56 inch. The average of a large number of measurements is 0·72 by 0·52 inch."

Mr. W. T. Blanford found the nests near Chanda, "under rocky ledges on the banks of rivers," and he was not quite sure that they were not deserted nests of *Hirundo rufiiceps* (i. e. *H. smithii*). He once found eggs in what appeared to be a deserted nest of *Hirundo fluvicola*.

The descriptions are taken from specimens in the British Museum, the figures being drawn from birds obtained by Mr. Wyatt near the Jumna at Etawah. He found it nesting on the walls of the fort at Agra, a part of which is represented in the sketch.

APPENDIX

TO THE

GENUS BIBLIS.

BIBLIS RUPESTRIS [*anteà*, p. 99, s. n. COTILE RUPESTRIS].

Add :—

Cotile rupestris, Lilford, Ibis, 1887, p. 266; St. John, Ibis, 1889, p. 155; Guillem. Ibis, 1889, pp. 215, 217; Lilford, t. c. p. 329; Sharpe & Wyatt, Monogr. Hirund. pt. xv. (1892); Pleske, Mél. Biol. xiii. p. 293 (1892).

LORD LILFORD noticed this species at Acona, on the Isle of Elba, during his yachting cruise in the Mediterranean. An adult bird from Chun-fy-tschin, in the Tetung Mountains, is recorded by Dr. Pleske.

For the geographical distribution of this species, *vide infrà*, Plate 34 [Map].

BIBLIS OBSOLETA [*anteà*, p. 111, s. n. COTILE OBSOLETA].

Add :—

Cotile obsoleta, Sharpe & Wyatt, Monogr. Hirund. pt. iv. (1886); Gigl. Avif. Ital. p. 190 (1886); id. op. cit. 1° Resoc. p. 321 (1889).

Ptyonoprogne obsoleta, Oates, ed. Hume's Nests & Eggs Ind. B. ii. p. 183, note (1890); id. Faun. Brit. Ind., Birds, ii. p. 276 (1890).

Biblis obsoleta, Salvad. Elenc. Ucc. Ital. p. 84 (1887).

Cotyle obsoleta, Giglioli & Manzella, Iconogr. Avif. Ital. pt. xlii. (1888); Barnes, Ibis, 1893, p. 69.

DR. GIGLIOLI has included this species among the birds of Italy. He found two specimens in the Florence Museum bearing the indication that they were procured in Tuscany in the spring of 1831, and, having traced their history in the records of the Museum, he believes it possible that they were really Tuscan specimens, especially as they were registered as *C. rupestris*, and not recognized as being anything peculiar. Count Salvadori has stated his belief that the occurrence of *C. obsoleta* in Italy is admitted on insufficient grounds; but the facts are very fairly set forth by Dr. Giglioli, who does not

place any undue reliance upon them. The species may wander to Italy, but, in our opinion, further confirmation of the fact is necessary.

Lieut. Barnes writes from Aden:—"The Pale Crag-Martin is a common permanent resident, breeding freely in the caves, in the face of the cliffs, generally in inaccessible places. I tried to get eggs, and have offered good prices to the Arab and Somali boys for them, but without success. I have several times managed to climb up to nests, only to find them either empty or containing young. On one occasion only was I rewarded by finding an addled egg, in company with some unfledged nestlings. This egg is similar to, but rather larger than, the egg of *Cotyle concolor*. They seem to breed throughout the year, as I have seen nests in February, May, July, and October."

For the geographical distribution of this species, *vide infrà*, Plate 33 [Map].

BIBLIS FULIGULA [*anteà*, p. 115; s. n. COTILE RUFIGULA].

Add:—

Cotile fuligula, Sharpe & Wyatt, Monogr. Hirund. pt. ii. (1885).

Cotyle fuligula, Seebohm, Ibis, 1887, p. 349.

MR. SEEBOHM noticed this Martin in the parts of the Karoo through which he travelled.

For the geographical distribution of this species, *vide infrà*, Plate 33 [Map].

BIBLIS ANDERSSONI [*anteà*, p. 119; s. n. COTILE ANDERSSONI].

For the geographical distribution of this species, *vide infrà*, Plate 33 [Map].

BIBLIS RUFIGULA [*anteà*, p. 121; s. n. COTILE RUFIGULA].

Add:—

Cotyle rufigula, Fischer, J. f. O. 1885, p. 128; Emin, J. f. O. 1891, pp. 340, 345.

Cotile rufigula, Sharpe & Wyatt, Monogr. Hirund. pt. vi. (1887); Salvad. Ann. Mus. Civic. Genov. (2) vi. pp. 233, 531 (1888); Sharpe, Ibis, 1892, p. 306.

Clivicola rufigula, Reichen. J. f. O. 1892, p. 31.

DR. RAGAZZI procured this species at Let-Marefia in Shoa in March. Emin Pasha met with it at Bussisi on the eastern side of the Victoria Nyanza, and Mr. F. J. Jackson at Savé on Mount Elgon in February. He writes:—"This Crag-Martin was found in a small colony on a precipitous crag, where they were evidently breeding. I saw two or three nests fastened on to the face of the rock, like the nests of the Edible Swift." He also states that he saw several among the hills near Turquel in the Sük country.

For the geographical distribution of the present species, *vide infrà*, Plate 33 [Map].

BIBLIS CONCOLOR [*anteà*, p. 123; s. n. COTILE CONCOLOR].

Add:—

Ptyonoprogne, sp., Hume & Davison, Str. F. vi. p. 45 (1878); Oates, B. Brit. Burm. i. p. 311 (1883).

Cotile concolor, Sharpe & Wyatt, Monogr. Hirund. pt. iv. (1886); Salvad. Ann. Mus. Civic. Genov. (2) v. p. 576 (1888).

Ptyonoprogne concolor, Swinhoe & Barnes, Ibis, 1885, p. 60; Oates, ed. Hume's Nests & Eggs Ind. B. ii. p. 181 (1890); id. Faun. Brit. Ind., Birds, ii. p. 275 (1890).

WHEN in Tenasserim the late Mr. Davison observed several specimens of a Rock-Martin about the inaccessible precipices on the eastern side of Mooleyit, near its summit. Mr. Hume adds a note:—"He thought it was exactly like *C. concolor*, but that species is scarcely likely to have occurred there." It would seem, however, from subsequent events that Mr. Davison was quite right in his identification of the species, for Mr. Fea procured a couple of specimens on the 20th of March at the top of Mooleyit, as recorded by Count Salvadori.

The following additional notes on the nesting of the species have been published since our account of the bird, in Mr. Oates's edition of Mr. Hume's 'Nests and Eggs of Indian Birds':—

"Major C. T. Bingham writes, from Allahabad:—'On the 13th October I found a nest with two eggs. A mud cup, stuck against a niche in the ruins of an old temple, $3\frac{1}{2}$ inches in depth outside, 1 in depth inside, lined with a few straws and feathers. Eggs pale pinky white, blotched rather than speckled with tiny marks of grey and purple and sepia.'

"Colonel Butler writes:—'The Dusky Crag-Martin breeds at Mount Aboo in June and July, on the sides of cliffs and in hollow rocks, sticking the nest to the wall, as do others of the tribe. The nest is usually a half-open cup at the top, similar in composition and appearance to the nest of *Hirundo filifera*.

"'On the 26th of August, 1876, I found a nest in Deesa similar to the one already described, but built against a wall under the eaves of a building in the European barracks. It contained two nearly fresh eggs. Another nest in Deesa, in a similar situation, contained three fresh eggs, on the 24th of September, 1875. Another nest on a beam in the verandah of the regimental school, Deesa, 5th October, 1876, contained three fresh eggs.'

"Subsequently he wrote from Belgaum:—'Belgaum, 13th July, 1879, three fresh eggs; 11th August, three fresh eggs; 15th August, two fresh eggs; 29th August, three fresh eggs; 21st February, 1880, three fresh eggs; 15th March, three fresh eggs.'

"My friend Mr. Benjamin Aitken favours me with the following note:—'These birds may be seen wherever there is a range of cliffs or a row of dark walls, provided the place is not much frequented by men; and they always choose the shady side, as far as

I have observed, to sail up and down. Their old nests are very numerous on the rocks that line the railway-cutting through the Bhore Ghât, and also on the cliffs at Poorundher, the sanitarium 18 miles south of Poona. These nests are placed at from 5 to 12 feet from the ground. I satisfied myself that the Martins were breeding on the top of the Bhore Ghât at the end of May 1871, and on the 9th of June I observed a pair at their nest at the bottom of the Ghât.

" 'At Poona, on the 1st of March, 1871, I saw a nest under a ledge of stone in a well. The old bird was sitting, and, though repeatedly frightened off, only made two or three circles round the inside of the well and returned to the nest.

" 'The nest was then given up as inaccessible, from distance and other causes; but on the 20th of the following August my brother went down to the same nest by means of a rope, and found two eggs, on which the bird was sitting. He described the nest as extremely fragile; it crumbled to pieces on the first touch.

" 'In June of the same year my brother, Mr. E. Aitken, saw a nest, in which the parent bird was sitting, under the porch of the Club at Poona. Of this he has perhaps informed you himself.'

"Messrs. Davidson and Wendon remark :—'In the Sholapoor districts it breeds in abundance in the rains and in February. At Egutpoora it was breeding in the verandah of the Engineers' bungalow in the middle of March and first week in August. At Lanoli on 20th March.'

"Mr. G. Vidal, relating his experiences in the South Konkan, says :—'Common on the coast and for a few miles inland. I have found nests on the cliffs in February, March, and April, and under the eaves of a bungalow in August.'

"Referring to Rajputana in general, Lieut. H. E. Barnes tells us that 'the Dusky Crag-Martin breeds during March and April, and again in July and August. The nest, composed of pellets of mud, well lined with feathers, is deep saucer-shaped, and is generally affixed to the side of a house under shelter of the eaves.' "

Colonel Swinhoe and Lieut. Barnes, in their paper on the Mhow district, state that this Martin is a permanent resident and breeds during February and March, and again in October and November.

For the geographical distribution of this species, *vide infrà*, Plate 33 [Map].

GEOGRAPHICAL DISTRIBU

←→	Migratory.
←/→	Bird of passage.
←⊖→	Remains locally during the winter.
←Δ→	Transplanted.
←×→	Winter resident.

Δ	Accl
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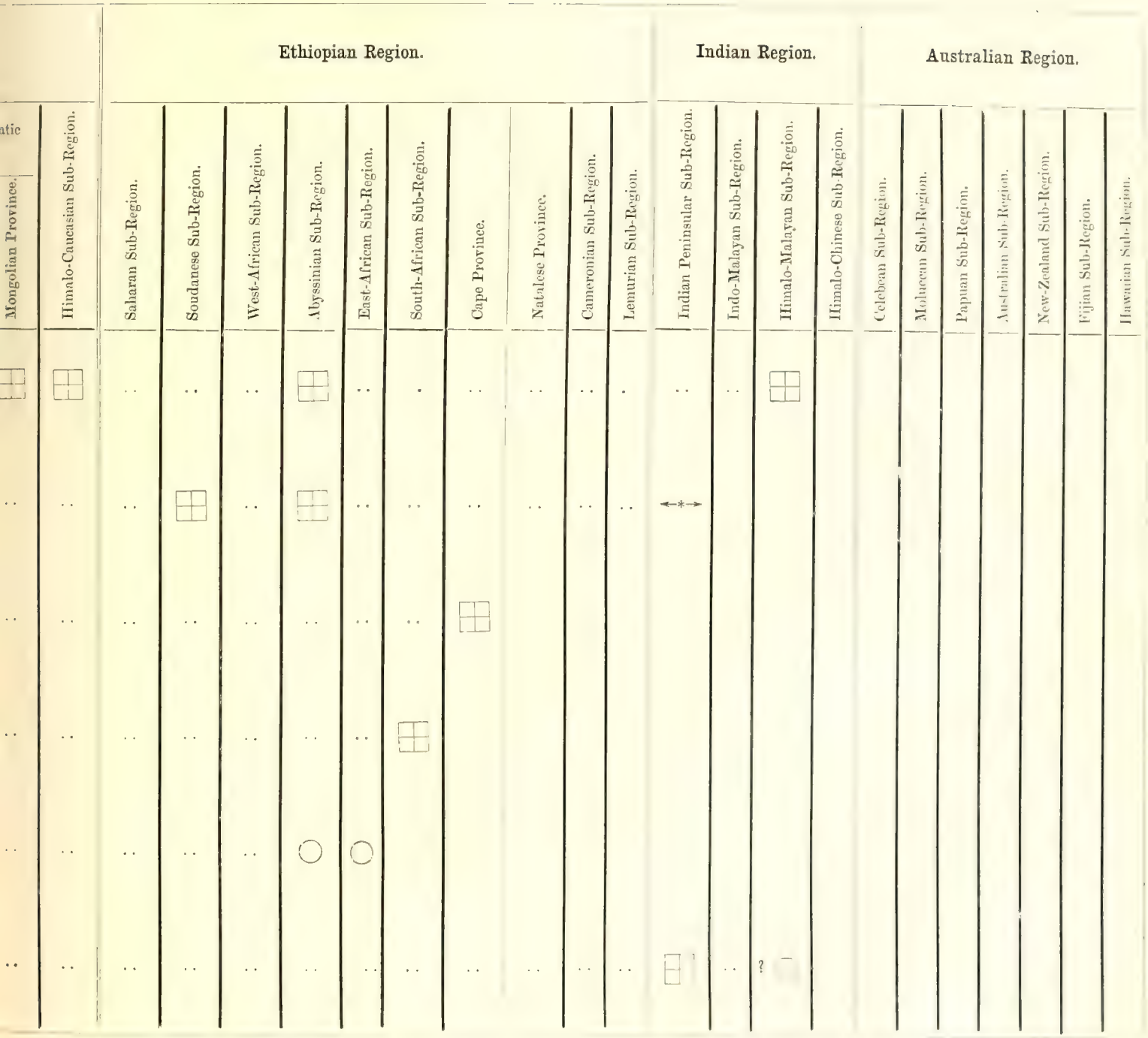
	Nearctic Region.										Neotropical Region.								
	Arctic Sub-Region.		Cold Temperate Sub-Region.				Warm Temperate Sub-Region.					Central American Sub-Region.							
							Humid Province.		Arid Province.										
	Arctic Province.	Alaskan Arctic Province.	Hudsonian Province.	Canadian Province.	Sitkan Province.	Aleutian Province.	Appalachian Sub-Province.	Austro-Riparian Sub-Province.	Campestrian Sub-Province.	Sonoran Sub-Province.	Antillean Sub-Region.	Mexican Province.	Isthmian Province.	Sub-Andean Sub-Region.	Amazonian Sub-Region.	Brazilian Sub-Region.	Patagonian Sub-Region.	Arctic Sub-Region.	Eurasian Sub-Region.
																			European Province.
1. *B. rupestris*	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2. *B. obsoleta*	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
3. *B. fuligula*	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
4. *B. anderssoni*	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
5. *B. rufigula*	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
6. *B. concolor*	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

OF THE GENUS BIBLIS.

V Guest.

† Wanderer.

Rarely
Generally
In colonies
} nesting.



Genus IV. TACHYCINETA.

	Type.
Tachycineta, Cab. Mus. Hein. Th. i. p. 48 (1850)	*T. thalassinus.*
Iridoprocne, Coues, B. Color. Vall. p. 472 (1878)	*T. bicolor.*

Range. Nearly the whole of the New World.

Clavis specierum.

a. Uropygium album.

a'. Tectrices alarum majores et remiges secundariæ latè albo marginatæ . 1. *albiventris*, p. 139.

b'. Tectrices alarum minimè latè albo marginatæ.

a''. Suprà chalybeo- aut viridi-cæruleus : genis anticis minimè nigris.

a'''. Major : alâ 4·45 poll. : fronte basali et striâ supralorali albis . . . . . 2. *leucorrhous*, p. 143.

b'''. Minor : alâ 3·9 poll. : striâ supralorali albâ : fronte basali minimè albâ . . . . . 3. *albilinea*, p. 149.

b''. Suprà purpurascenti-cæruleus : genis anticis nigris . . . . . 4. *meyeni*, p. 153.

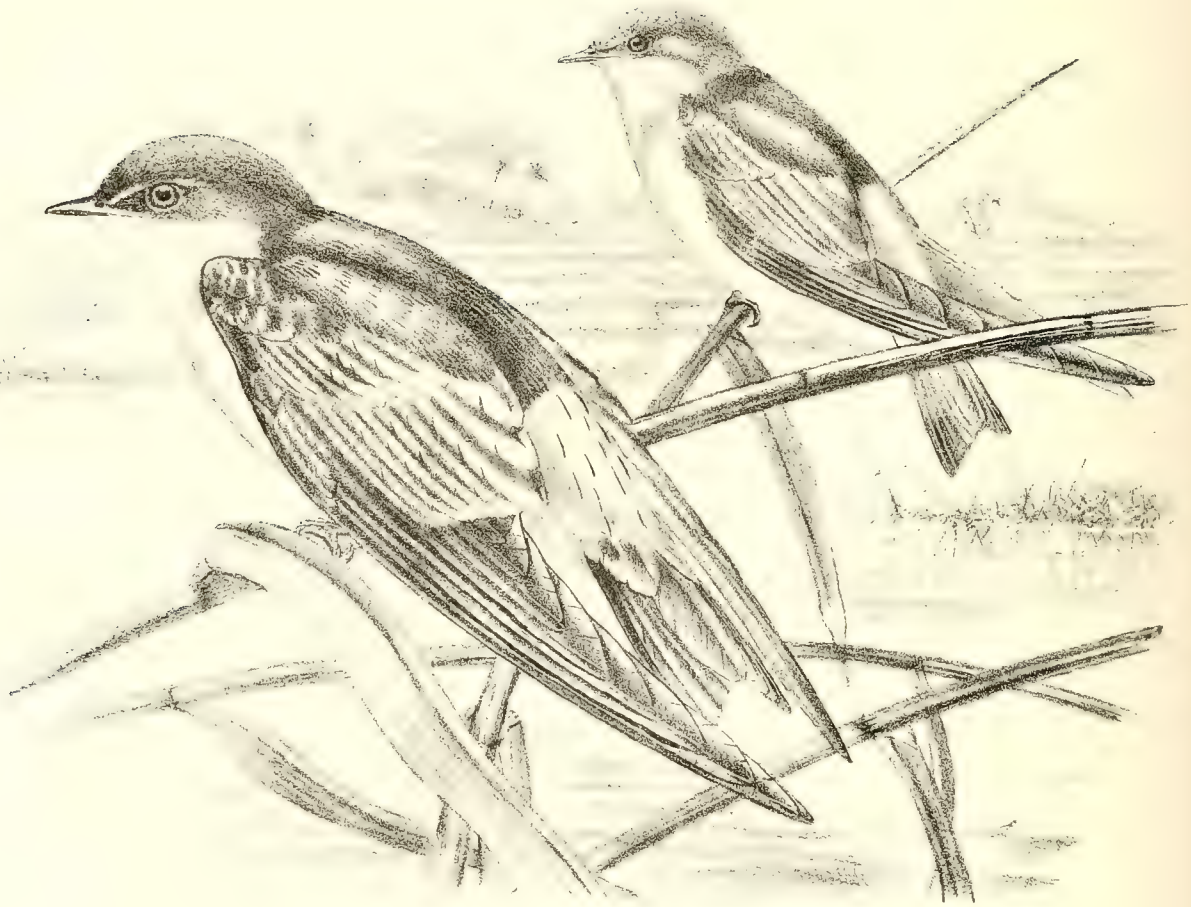
b. Uropygium dorso concolor : subtùs omnino purè albus.

c'. Suprà nitidè viridis : supracaudalibus dorso reliquo concoloribus . . 5. *bicolor*, p. 155.

d'. Suprà viridis aut æneo-viridis : supracaudalibus chalybeis vel purpurascentibus : dorso viridi vel æneo-viridi.

c''. Minor : uropygio laterali albo : caudâ vix emarginatâ . . . . 6. *thalassinus*, p. 175.

d''. Major : uropygio laterali dorso concolore : caudâ valdè furcatâ . 7. *cyaneoviridis*, p. 185.



C.W.W. del.

Mintern Bros. imp.

TACHYCINETA ALBIVENTRIS

TACHYCINETA ALBIVENTRIS (*Bodd.*).

WHITE-WINGED SWALLOW.

Hirondelle à ventre blanc de Cayenne, Daubent. Pl. Enl. vii. pl. 546. fig. 1.
White-winged Swallow, Lath. Gen. Syn. ii. pt. 2, p. 577 (1783).
Hirundo albiventer, Bodd. Tabl. Pl. Enl. p. 32 (1783, ex Daubent.); Gray, Gen. B. i. p. 58 (1845); id. Hand-l. B. i. p. 71, no. 843 (1869).
Hirundo leucoptera, Gm. Syst. Nat. i. p. 1022 (1788); Neuwied, Beitr. Naturg. Bras. iii. p. 362 (1830); D'Orb. & Lafr. Syn. Av. p. 69 (1837); Cab. in Schomb. Reis. Guian. iii. p. 672 (1848); Tschudi & Cab. Faun. Peruan. p. 132 (1855).
Herse leucoptera, Bp. Consp. i. p. 341 (1850).
Petrochelidon leucoptera, Cab. Mus. Hein. Th. i. p. 49 (1850).
Petrochelidon albiventer, Cass. Cat. Hirund. Mus. Philad. Acad. p. 5 (1853).
Cotyle leucoptera, Burm. Th. Bras. iii. p. 143 (1856).
Petrochelidon albiventris, Sclater, Cat. Amer. B. p. 41 (1862); id. & Salv. P. Z. S. 1866, p. 178; Pelz. Orn. Bras. pp. 17, 402 (1871); id. Ibis, 1873, p. 108.
Hirundo albiventris, Baird, Review Amer. B. p. 302 (1865); Scl. & Salv. P. Z. S. 1867, p. 569; Wyatt, Ibis, 1871, p. 323; Layard, Ibis, 1873, p. 378; Scl. & Salv. Nomencl. Av. Neotr. p. 14 (1878); iid. P. Z. S. 1873, p. 258; iid. P. Z. S. 1879, p. 595; Tacz. P. Z. S. 1882, p. 8; id. Orn. Pérou, i. p. 239 (1884); Sharpe, Cat. Birds in Brit. Mus. x. pp. 113, 630 (1885).
? *Hirundo leucorrhoa*, Forbes, Ibis, 1881, pp. 315, 329.

T. uropygio albo: tectricibus alarum et secundariis albo latè marginatis.

Hab. in Americâ meridionali.

Adult male. General colour above glossy steel-blue, rather greener on the back, the hind neck and mantle mottled with white bases to the feathers; wing-coverts like the back; inner greater coverts and secondaries blue-black, broadly and conspicuously edged with white on the outer webs and round the tip; the bastard-wing, primary-coverts, and primaries black, glossed with dull steel-blue externally; lower back, rump, and upper tail-coverts white, with blackish shaft-lines; longer upper tail-coverts steel-blue; tail-feathers blackish glossed with steel-blue, with white bases to the inner web; lores and feathers below the eye velvety black; ear-coverts and sides of neck glossy steel-blue like the head; cheeks and entire under surface of body pure white, including the thighs and under tail-coverts, under wing-coverts and axillaries; quills dusky below: "legs greyish brown; iris greyish brown" (*Neuwied*). Total length 4·8 inches, culmen 0·4, wing 4, tail 1·9, tarsus 0·45.

Adult female. Similar to the male in colour. Total length 4·8 inches, culmen 0·35, wing 4, tail 1·85, tarsus 0·4.

Obs. There does not seem to be much variation in plumage in this species beyond that the shade of colour on the back varies between green and blue, and the shaft-lines on the breast are more distinct in some than in others; they apparently become obscured in winter, as is the case with other Swallows of this group. Sometimes the streaks on the rump and upper tail-coverts are very broad.

A young bird shot by Mr. Wyatt in the Magdalena Valley is smoky brown, glossed with dull green on the back and wing-coverts; quills and tail brown; the white edgings to the greater coverts are almost obsolete, but the white on the inner secondaries is strongly pronounced.

Hab. South America throughout Brazil and Amazonia to Colombia, Ecuador, and Guiana.

This very distinct species of *Tachycineta* has a wide distribution in South America. It inhabits the whole of Guiana, having been originally described from Cayenne, while specimens from Surinam are in the U.S. National Museum. Mr. Henry Whitely has sent it from British Guiana, viz. from Bartica Grove (Sept.) and Camacusa (June).

We have not found any instance recorded of its occurrence in Venezuela, but Mr. Wyatt procured it in Colombia, where it was confined to the low country. He noticed it on the Magdalena River and the Lake of Paturia. In Ecuador Buckley obtained specimens on the Copataza River.

Mr. Edward Bartlett met with this species in Eastern Peru, and it was found by him on the Upper and Lower Ucayali and at Santa Cruz. He found it breeding in July and August. Stolzmann met with it at Yurimaguas in February, and Mr. Hauxwell has procured it at Pebas in the same month.

The White-winged Swallow also appears to inhabit Bolivia, as d'Orbigny procured it in the province of Moxos, and a Bolivian specimen is in the U.S. National Museum.

In Brazil Prince Maximilian states that he met with it both on the coast and in the interior. It was found plentifully to the southwards, on the Parahyba, on the Mucuri, and it was very common at Belmonte, Ilhéos, &c. Natterer met with it at Pirahy in November, and in the Ypanema district in January, February, April, May, and November. Wucherer procured specimens near Bahia, and from Pernambuco Mr. Forbes writes:—"This Swallow I found very common in Recife, where it might be seen flying about in numbers in some of the streets, as well as over the rivers which separate the various parts of the town. I also observed it at Parahyba, but in the interior it seems to disappear."

Mr. Wallace and Mr. Layard both met with it near Para.

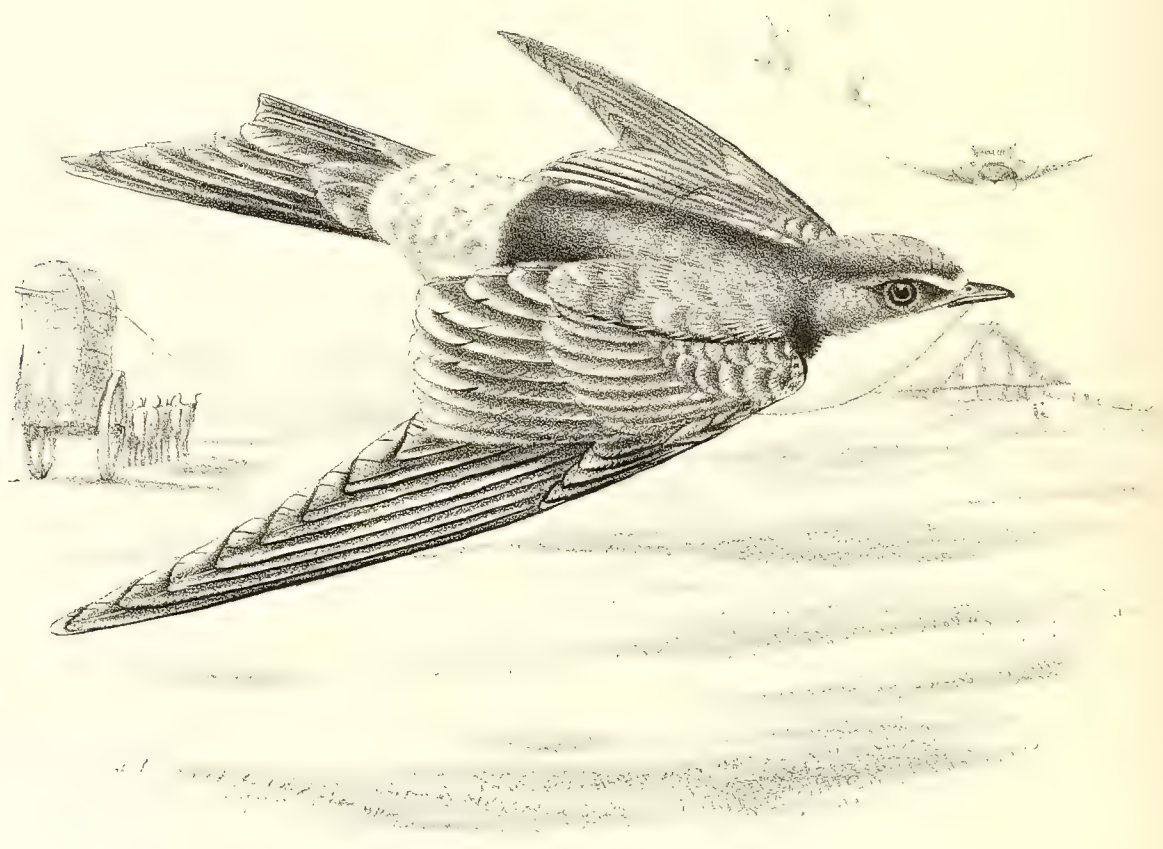
Prince Maximilian of Neuwied has given the following note on the habits of the species as observed by him in Brazil:—"It flies low over the surface of the water, resting on the branches and small twigs of the stumps, which are uprooted by the course of the stream, and which are stuck fast in the sand in every direction. The cry

is a short chirrup. It is constantly occupied in the pursuit of insects, and is frequently seen in company with *Hirundo ruficollis*. I found the nest in an old tree-trunk, split by the water, and fast buried in the sand: it was placed at the end of the tree between the wood and the bark, and consisted of an exposed mass of dry grass and stalks mixed with feathers, amongst which were some of the red plumes of the Macaw (*Ara macao*) and the green feathers of a Surukuá (*Trogon*). The depth of the nest is very small, and two white eggs were found in the beginning of October or the end of September."

Mr. E. Bartlett found the species breeding in the Ucayali River. He writes:—

"Builds in holes of dead trees on the banks of rivers overhanging the water. The nest is composed of fibres of bark, dry grass, and feathers of different kinds of birds, such as the White Heron, Roseate Spoonbill, &c. Four white eggs are laid in July or August." The eggs are said to be of about the same size as those of the Common Martin of Europe.

The descriptions are taken from birds in the British Museum, and the figures in the Plate, which represent an old and a young bird, the former from a specimen in the Salvin-Godman collection, and the latter from a bird procured by Mr. Wyatt in the Magdalena Valley.



C W W del

Mintern Bros. imp

TACHYCINETA LEUCORRHOUS.

TACHYCINETA LEUCORRHOUS (*Vieill.*).

SOUTH-AMERICAN GREEN SWALLOW.

Golondrina rabadilla blanca, Azara, Apunt. ii. p. 509 (1802); Hartl. Ind. Azara, p. 19 (1847).

Hirundo leucorrhoa, Vieill. N. Dict. d'Hist. Nat. xiv. p. 519 (1817); Gray, Gen. B. i. p. 58 (1845); Burm. Th. Bras. iii. p. 144 (1856); Baird, Review Amer. B. p. 301 (1865); Scl. & Salv. P. Z. S. 1868, p. 139, 1869, p. 597; Gray, Hand-l. B. i. p. 72, no. 847 (1869); Hudson, P. Z. S. 1871, p. 327, 1872, pp. 606, 845, 846; Scl. & Salv. Nomencl. Av. Neotr. p. 14 (1873); iid. P. Z. S. 1873, p. 185; Durnf. Ibis, 1876, p. 158, 1877, pp. 32, 169, 1878, p. 392; Gibson, Ibis, 1880, p. 14; White, P. Z. S. 1882, p. 596; Salvin, Cat. Strickl. Coll. p. 150 (1882); Tacz. Orn. Pérou, i. p. 241 (1884); Sharpe, Cat. Birds in Brit. Mus. x. pp. 114, 631 (1885).

Hirundo frontalis (nec Quoy & Gaim.), Gould in Darwin's Voy. 'Beagle,' Birds, p. 40 (1841).

Herse leucorrhoa, Bp. Consp. i. p. 341 (1850).

Petrochelidon leucorrhoa, Cab. Mus. Hein. Th. i. p. 48 (1850).

Hirundo gouldii, Cass. Proc. Philad. Acad. 1850, p. 69.

Petrochelidon leucorrhoa, Cass. Cat. Hirund. Mus. Philad. Acad. p. 5 (1853); Pelz. Orn. Bras. pp. 17, 402 (1871).

Hirundo leucopyga, Licht. Nomencl. Av. p. 61 (1854).

Cotyle leucorrhoa, Burm. Reis. La Plata-St. ii. p. 478 (1861).

Hirundo (*Tachycineta*) *leucorrhoa*, Barrows, Bull. Nutt. Orn. Club, viii. p. 89 (1883).

T. supra viridis; uropygio albo; tectricibus alarum majoribus haud albo marginatis; genis totis albis nec anticè nigris; lineâ supralorali albâ trans frontem basalem ductâ.

Hab. in Braziliâ meridionali, Patagoniâ et Peruviâ.

Adult female. General colour above glossy steel-green; lesser and median wing-coverts like the back; greater coverts, bastard-wing, primary-coverts, and quills blackish, externally washed with green, the inner secondaries margined with white towards the tip of the outer web and at the end; rump white, slightly washed with smoky brown, some of the feathers tipped with dusky brown; upper tail-coverts dull steel-green; tail-feathers blackish with a slight greenish gloss; crown of head like the back; lores velvety black; base of forehead white, extending a little backwards above the lores; ear-coverts blackish glossed with steel-green; cheeks and entire under surface of body white, including the thighs and under tail-coverts; a patch of glossy steel-green on each side of the upper breast; flanks and sides of body washed with smoky brown; axillaries and

under wing-coverts pale smoky brown, the external coverts slightly mottled with blackish bases; quills dusky below: "bill, legs, and iris black" (*A. Peel*). Total length 5·5 inches, culmen 0·35, wing 4·45, tail 1·9, tarsus 0·5.

The specimen described is in the British Museum. It was obtained by Mr. Alan Peel in Uruguay in August 1877, and appears to be a tolerably adult bird, though the remains of smoky brown tips to the white feathers of the rump may be a sign of immaturity, as specimens collected by Mr. Hudson at Conchitas, in September, have the rump pure white.

There appears to be no difference in the colouring of the sexes, and the measurements are as follows:—

	Total length. in.	Culmen. in.	Wing. in.	Tail. in.	Tarsus. in.
♂ imm. Rio Grande do Sul (*Joyner*)	5·0	0·35	4·4	1·8	0·45
♀ imm. „ „ „	5·5	0·4	4·45	1·9	0·45
♀ imm. Uruguay (*A. Peel*)	5·5	0·35	4·45	1·9	0·5
ad. Brazil (*Mus. P. L. S.*)	5·0	0·4	4·5	1·9	0·5
ad. „ (*Albuquerque*)	5·2	0·35	4·5	1·85	0·5
♀ ad. Conchitas, Buenos Aires (*W. H. Hudson*)	5·3	0·35	4·5	1·85	0·5
♀ ad. „ „ „	5·4	0·35	4·6	1·9	0·45
♀ ad. Cosnipata, Peru (*H. Whitely*)	5·0	0·35	4·7	1·85	0·5

Young birds apparently have smoky brown tips to the feathers of the rump, and also distinct white margins to the secondaries and upper tail-coverts.

Hab. Southern Brazil, Uruguay, Patagonia, and Peru.

The celebrated Portuguese naturalist Azara seems to have been the first to describe the present species, in his work on the natural history of Paraguay, and on his description Vieillot founded his *Hirundo leucorrhoa*. The next mention of the species appears to have been by Mr. Gould, who redescribed it from specimens obtained by Mr. Darwin at Monte Video during the voyage of the 'Beagle.' He called it *Hirundo frontalis*, and gave a somewhat careless description, omitting all mention of the characteristic white rump. As the name of *frontalis* had already been bestowed on an Australian species of Swallow by Messrs. Quoy and Gaimard, the late Mr. Cassin proposed in 1850 to call the Brazilian species *H. gouldi*; but in 1853 he recognized that it was the same as *Hirundo leucorrhoa* of Vieillot, and suppressed his name of *H. gouldi*.

Azara describes the present species as common in Paraguay, nesting in the holes of trees, but on the La Plata river, where there are no trees, in holes in the ground.

Most of the specimens examined by us have been from the neighbourhood of Buenos Aires, and some excellent accounts of the habits of the species are given below. Mr. Darwin's specimen which he obtained at Monte Video is not in the British Museum. In the collection of Messrs. Salvin and Godman are a pair of birds from Pelotas, in Rio Grande do Sul, collected by Mr. Joyner, and Natterer obtained examples

at Taubaté and Ypanema in the province of San Paulo, in the month of November. The same distinguished traveller met with the species at Matogrosso in June, and no one appears to have found it to the northward of these localities, though Mr. Henry Whitely obtained it at Cosnipata in Peru, in October, at about a similar latitude.

The late Mr. E. W. White found the species at Santo Tomé, in the province of Corrientes, Argentine Republic. It was very abundant in May at the above locality, and he obtained a specimen out of a number flying over a small lagoon close to the river Itacua. Professor Burmeister, in his journey through the La Plata States, met with the species at Parana, but it was not common.

Mr. Durnford also found it plentiful during his visit to the Chuput valley in Patagonia, and on the evening of November 25th he observed many congregating as if for a migratory movement. He notes it (as might have been expected) as a spring and summer visitor, and says that it was observed commonly throughout the journey wherever there were steep cliffs or rocks. He took some eggs near Tombo Point on the 30th of December. All had left Chuput by the 1st of March.

Mr. Walter Barrows, in his account of the birds of Lower Uruguay, writes :—"By far the most abundant Swallow at all points visited. Arriving from the north early in July, it remains through the summer and does not leave until the following April. Abundant alike in the crowded streets of Buenos Aires and on the monotonous pampas, it is known everywhere by the name 'Golondrina,' and its appearance after the cold weather is hailed as one of the earliest signs of returning summer. Through October and November it breeds at Concepcion wherever it can find a suitable spot, placing its nest of grass, wool, and feathers in any safe cavity about a dwelling-house or shed, or not unfrequently in the deserted nest of a *Furnarius* or *Anumbius*. From a nest of the latter bird I took a set of this Swallow's eggs—five in number—on October 30, the parent birds hovering close about my head as I examined the nest. The eggs are pure white. During the mating-season the male has a very pretty song, not unlike that of the Eastern Bluebird, though not as long, and seldom delivered without interruption."

Dr. Durnford has written the following account of the species in the neighbourhood of Buenos Aires :—

"On April 3rd I saw a specimen of *Hirundo leucorrhoa* flying over the island of Flores, to the east of Buenos Aires; and on August 10th I observed others at Belgrano; from the latter date to the 18th they appeared sparingly, the weather being cloudy and unsettled; by October 9th they were busily engaged in building their nests, and were very abundant. I often observe birds of this species clinging to the trunks of large willow trees which are full of holes; they also perch on twigs just outside the holes; and once I saw one sitting on the edge of a large opening in a branch."

Again he writes :—"Arrives early near Buenos Aires (I saw some on the 10th of August last year), and does not leave us till the middle of April. I speak of the main body; for many birds remain with us all the winter. On the 30th of July I saw two or

three hundred of them in the course of a long walk a little to the north of Buenos Aires. It was quite warm and very fine, not at all like winter. This is the most common Swallow we have, and there is scarcely a ranche in the country that has not its one or two pairs breeding under the eaves or in the cracks of the walls. It also resorts to holes in trees for nesting-purposes. Though during cold and dull weather in the winter none are visible sometimes for weeks together, a warm bright day never fails to attract some from their temporary shelter, wherever that may be. Pretty common at Baradero in April."

The following account is from the pen of that excellent observer Mr. W. H. Hudson:—

"The *Hirundo leucorrhoa* is the most common of our Swallows near Buenos Aires, and in its glossy coat of deep blue and green, with rump and under-plumage snowy white, is an elegant and beautiful bird. They are the last of all the migratory species to leave us in autumn, and invariably reappear in small numbers on every warm day in winter, so that some people do not believe that they leave us at all, but only retire to the more sheltered places when the weather is severe. In the winter of 1869 I saw three of them skimming over the plain on one of the coldest days I have ever experienced; the thermometer having stood at 29° Fahr. on the preceding evening. But those that remain through the winter with us are apparently only a few individuals, while in the autumn myriads are seen passing north in their migration, and some years continue passing for upwards of a month. In April 1869, several days after all the Swallows of our five species had totally disappeared, flights of the kind I am describing began again to appear passing north; and for ten days afterwards they continued to pass. They would descend to sip water from a pool where I watched them, alighting afterwards on the reeds and bushes to rest. Many of them appeared quite tired with their journey, rising reluctantly when approached, and some allowing me to stand within two yards of them without flying. I had never before observed any supplementary or later migration like this; and last autumn (1870) certainly nothing of the kind took place. Probably the migration of this species extends very far south; at present they are passing in great numbers, and have been so passing for the last fifteen days.

"They sometimes build in a tree, in the large nest, previously abandoned, of the Señatero (*Anumbius acuticaudatus*). I have had occasion before, and shall have it again in descriptions of other species, to mention that interesting bird and its great nest.

"It is, however, under the eaves of houses that these Swallows principally breed; and there is not a house on the pampas, however humble it be, but some of these birds are about it, sportively skimming over and about the roof or curiously peering under the eaves and incessantly uttering their gurgling, happy notes. Indeed their fondness for being close to a home is so remarkably strong that in their longest excursions they are seldom more than five minutes absent from it.

"For a month or six weeks before they begin to build, they seem to be holding an incessant dispute; and however many eligible chinks and holes there may be, the contention is always just as great among them, and is doubtless referable to opposing claims to the best places. The excited twittering, the constant striving of two birds to alight on the same square inch of wall, and the chases they lead each other round and round the house, that always end exactly where they began, tell of clashing interests and great unreasonableness on the part of some among them. By-and-by the quarrel takes a more serious aspect; apparently every argument of which a Swallow is capable has been exhausted, and a compromise more impossible than ever, and so fighting begins. Most vindictively do the little things clutch each other, and tumble to the earth twenty times an hour, often struggling on the ground for a considerable time, and heedless of the screams of alarm their fellows set up above them; for often while they lie struggling do they fall an easy prey to some wily pussy, who thrives on their disputes. When these troubles and feuds are finally ended, they address themselves diligently to the great work, and build a rather large nest. They are not neat or skilful workers, but merely stuff a great quantity of straw and other light material into the hole they build in, and line it thickly with feathers and horsehair. The eggs are white and pointed, from five to seven in number.

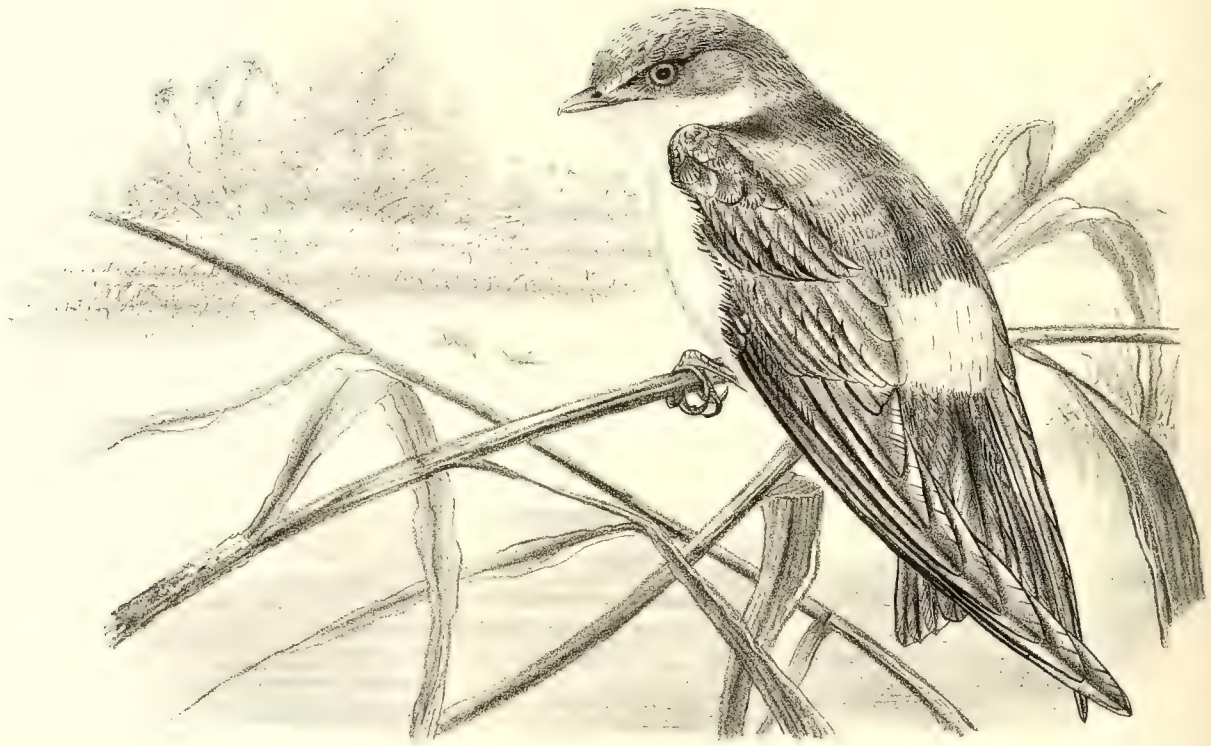
"All those species that are liable at any time to become the victims of raptorial birds are much beholden to this Swallow, as he is the most vigilant sentinel they possess: often when the Hawk is still far off and the other birds unsuspicious of his approach, the Swallows suddenly rush up towards the sky with a wild rapid flight, announcing the evil tidings with distracted screams. These are well understood; and the alarm spreads like lightning through the feathered tribes, which are all in terrified commotion, crouching in the grass and plunging into thickets, or mounting upwards to escape by flight. I have often wondered at this; for surely this swift-winged little bird is the least likely to fall a prey himself.

"They have another habit which cannot but be grateful to the mind of every lover of nature who is an early riser. An hour before sunrise, and ere any wild bird has broken the profound silence of night, multitudes of these Swallows, as at the signal of a leader, begin their song, at the same time mounting upward into the still dusky sky. Their notes at this time are different from the hurried twitterings they utter through the day; they are impressive, and, though soft, may be heard at a long distance; sounding far and near, up in the sky, from so many throats, they have a most charming effect that seems in peculiar harmony with the shadowy morning twilight."

In another letter Mr. Hudson writes:—"I continue to meet so frequently with single birds and small parties of the *Hirundo leucorrhoa*, even on the coldest days of winter, that I am quite positive the birds of this species breeding as far north as Buenos Aires city migrate in an exceedingly irregular manner, many remaining with us all the year, and that the further south we go we find their migrations become more strict and definite; for in Patagonia from March to August I saw not one of them. The same may be said of some other migratory species in this region."

The migrations of this species are not at all easy to follow, as it appears to be somewhat irregular in its movements, as detailed above by Mr. Hudson. Where the large numbers which pass through Buenos Aires spend the winter has yet to be ascertained for a certainty. The records quoted above show that the species breeds in the neighbourhood of Buenos Aires in October, and further south, in the Chuput valley, it was breeding in December. In the latter locality it had left by the 1st of March, but it remains at Buenos Aires till April; and Mr. Barrows states that it returns early in July, though Mr. Durnford considers August the month of arrival. It is therefore absent, as a rule, from May till August, and Mr. White met with it in Corrientes in May, and Natterer at Matogrosso in June; but that some birds remain in their northern home seems to be proved by its occurrence in San Paulo and in Peru in October.

The description and measurements are taken from the series in the British Museum. The specimen figured is from Pelotas, and is evidently a young bird, not having the pure white rump of the adult. (See our remarks above.)



J. W. W. del.

TACHYCINETA ALBILINEA.

Mintern Bros. imp.

TACHYCINETA ALBILINEA (*Lawr.*).

CENTRAL-AMERICAN GREEN SWALLOW.

Petrochelidon leucoptera (nec Gm.), Lawr. Ann. Lyc. N. Y. vii. p. 317 (1861).
Petrochelidon albilinea, Lawr. Ann. Lyc. N. Y. viii. p. 2 (1863); Salvin, Ibis, 1866, p. 192.
Petrochelidon littorea, Salvin, P. Z. S. 1863, p. 189; Scl. & Salv. P. Z. S. 1864, p. 347.
Hirundo albilinea, Baird, Review Amer. B. p. 300 (1865); Scl. & Salv. Nomencl. Av. Neotr. p. 14 (1873); Zeledon, Cat. Av. de Costa Rica, p. 5 (1882); Salv. & Godm. Biol. Centr.-Amer., Aves, i. pl. xv. fig. 1 (1883).
Tachycineta albilinea, Lawr. Mem. Bost. Soc. N. H. ii. p. 271 (1874); Salv. & Godm. Biol. Centr.-Amer., Aves, i. p. 235 (1883); Sharpe, Cat. Birds in Brit. Mus. x. pp. 115, 631 (1884).
Hirundo albilineata, Gray, Hand-l. B. i. p. 71, no. 845 (1869).
Hirundo leucopygia, Tacz. P. Z. S. 1880, p. 192; id. Orn. Pérou, i. p. 240 (1884); id. op. cit. iii. p. 503 (1886).

T. supra viridis: uropygio albo: tectricibus alarum majoribus haud albo marginatis: genis totis albis: lineâ supralorali minore nec trans basin frontis ductâ.

Hab. in Americâ centrali usque ad Peruviam.

Adult male. General colour above glossy steel-blue, more or less inclining to steel-green, the bases to the feathers of the mantle ashy white; rump white, with hair-like blackish shaft-lines; scapulars like the back; wing-coverts blackish, externally edged with steel-blue; greater coverts, bastard-wing, primary-coverts, and quills blackish, with a slight gloss of dull blue or steel-green on their outer webs; upper tail-coverts steel-blue; tail-feathers black with a steel-blue gloss; head like the back; lores and feathers below the eye velvety black, with a narrow supraloral streak of white; upper half of ear-coverts and sides of neck glossy steel-green; lower half of ear-coverts, cheeks, throat, and under surface of body pure white; the long under tail-coverts with remains of blackish longitudinal streaks near their ends; the fore neck, breast, and sides of body rather more ashy than the rest of the under surface and having narrow dusky shaft-lines; on the sides of the upper breast a small patch of steel-green; axillaries and under wing-coverts ashy whitish, with hair-like shaft-lines of dusky brown; quills below dusky, lighter along the inner webs. Total length 4·8 inches, culmen 0·4, wing 3·9, tail 1·9, tarsus 0·4.

The white margins to the inner secondaries, from which this species derives its name, are either signs of immaturity or winter plumage. In most Swallows these white edgings are indications of youth; but all the specimens as yet examined by us which possessed this character have been also in winter plumage, which in this species is not difficult to tell, as the under surface is much

whiter than in the summer plumage, there being much less of the ashy-brown shade on the breast and sides, while the dusky shaft-lines are almost entirely obscured.

The winter plumage is also more steel-green than the summer dress, the wearing of the feathers being accompanied by a steel-blue lustre in the place of the green.

This is a smaller species than *T. leucorrhous*, of which it is the northern representative. The white band across the rump is much narrower and has the dusky shaft-lines, the feathers adjoining the upper tail-coverts having a green or a dusky spot at their ends. There is none of the brown mottling which appears on the immature bird of *T. leucorrhous*. The chest has also some dusky shaft-lines, which are, however, often scarcely traceable, and are never so distinct as on the rump.

In the Sclater collection, now in the British Museum, is a specimen of *Hirundo leucopygia* of Taczanowski, received in exchange from the Warsaw Museum. The specimen in question seems to us to be undoubtedly a young bird. The under surface is washed with smoky brown, the green colour of the upper surface is duller, and the quills and tail are sooty brown, with very broad white margins to the inner secondaries. The upper tail-coverts are smoky brown, with distinct dusky blackish shaft-lines. The white rump-band is very narrow, but plainly marked with blackish shaft-lines.

If we are correct in believing this to be the immature plumage, it seems to prove that the white margins on the inner secondaries are a sign of immaturity, and it is certain that they become absolutely abraded in breeding birds.

The following are the measurements of the series in the British Museum, for comparison with the specimens of *T. leucorrhous* :—

	Total length.	Culmen.	Wing.	Tail.	Tarsus.
	in.	in.	in.	in.	in.
♂ ad. Vera Cruz, Mexico (*A. Boucard*) . . .	4·3	0·35	3·7	1·65	0·35
Ad. Progreso, Yucatan (*E. Devis*)	4·5	0·35	3·85	1·65	0·4
♂ ad. Belize, Honduras (*O. Salvin*)	4·5	0·4	3·75	1·65	0·4
♂ ad. Punta Arenas, Costa Rica (*O. S.*) . . .	4·8	0·4	3·9	1·9	0·4
Ad. Guatemala (*O. S.*)	4·4	0·35	3·8	1·7	0·4
♀ ad. Chiapam, Guatemala (*O. S.*)	4·5	0·4	3·7	1·5	0·4
Ad. Panama (*M'Leannan*)	4·0	0·35	3·65	1·55	0·4
♂ ad. „ „	4·3	0·4	3·9	1·6	0·35
Ad. „ „	4·3	0·35	3·7	1·6	0·4
♂ juv. Chepen, Peru (*J. Stolzmann*)	4·0	0·3	3·6	1·75	0·35

Allowing for age and condition of specimens, it will be seen that *T. albilinea* is a much smaller bird than *T. leucorrhous*, the wing never exceeding 4 inches in length.

Hab. Central America, from Mexico to Panama, reoccurring in Peru.

The first notice of this bird appears to have been the record by Mr. G. N. Lawrence of its occurrence in Panama, where it was procured by Mr. M'Leannan. Mr. Lawrence first determined the species as *Hirundo leucoptera*, which is a synonym of *Tachycineta albiventris*, a strictly South-American species. In 1863 Mr. Lawrence, detecting the error in his previous identification of the Panama bird, described it as a new species

under the name of *Petrochelidon albilinea*, and about the same time Mr. Salvin discovered the species in various parts of Central America and named it *P. littorea*; but he acknowledges that Mr. Lawrence's description was published before his own, and he adopted the name given by the last-named author.

The range of this Swallow throughout Central America is almost continuous. The late Colonel Grayson found it in Mexico, at Mazatlan, and specimens from the State of Vera Cruz, collected by Mr. Boucard, are in the British Museum. In British Honduras it was procured by Messrs. Salvin and Godman on the Belize River and the Cays of the coast. Although not yet recorded from Yucatan, Mr. G. F. Gaumer has recently sent a specimen from Jolbox Island, off the coast of that province.

In Guatemala the species was met with by Messrs. Salvin and Godman at several places, Peten, Yaxha, Rio Dulce, Huamuchal, Chiapam, and San José de Guatemala. At San Salvador in La Union, and again at Amapala in Honduras, it has been noticed by Mr. Salvin, while it is also recorded from Nicaragua. Mr. Zeledon includes the species in his list of Costa-Rica birds, and Messrs. Salvin and Godman procured a specimen at Punta Arenas, which is now in the British Museum. Mr. M'Leannan sent the original specimens from Panama, and Mr. Salvin found it breeding on the Chagres River in that State.

As before mentioned, we cannot separate the Peruvian bird specifically from *T. albilinea*, and it probably occurs in Ecuador also.

Messrs. Salvin and Godman believe the species to be resident in every country throughout Central America; and it appears to frequent inland waters as well as the sea-coast, breeding in old Woodpeckers' holes in the snags of rivers in British Honduras. At Matachio, on the Chagres River, a nest with young birds was found by Mr. Salvin in May 1873, in an old post, a hollow palm which had once served to support the roof of a hut.

The late Colonel Grayson has given the following account of the species in Western Mexico:—

"This handsome little Swallow is common at Mazatlan, where it is a constant resident, one among the few Swallows that is not migratory. At all seasons of the year its twitter may be heard about the eaves of the houses, or the spacious corridors of the peculiarly constructed Moorish Mexican haciendas. We often see it skimming along the streets, at times almost touching the pavement in its pursuit of flies. Its customary haunts are near or about large towns or haciendas, and rarely have I seen it far from some human habitation. In April it commences to form the nest, usually beneath the eaves of houses or in holes in the wall, often in the hollow tubes for conveying the water from the flat roofs of the buildings. They are very sociable in their habits, and may often be seen in considerable numbers perched upon the roofs of the houses."

To this note Messrs. Salvin and Godman append the following remarks:—

"This account of the habits of *T. albilinea* hardly agrees with our experience. We only found them along river-courses or frequenting lagoons or lakes, a favourite perch

being the dead bough of a snag projecting out of a river. Such places would often be far from any village; and though these birds were sometimes observed by us near habitations, they did not seem to be the attraction, but some river flowing hard by."

Our descriptions are copied from the British-Museum 'Catalogue,' and the figure in the Plate represents an adult bird in the collection of Messrs. Salvin and Godman.



Mintern Bros imp.

TACHYCINETA MEYENI

TACHYCINETA MEYENI (*Cab.*).

CHILIAN SWALLOW.

Hirundo leucopyga (nec Licht.), Meyen, Nova Acta Acad. Leop.-Carol. Nat. Cur. 1834, Suppl. p. 73, pl. 10.

Hirundo leucopygia (nec Licht.), Gould in Darwin's Voy. 'Beagle,' Birds, p. 40 (1841).

Petrochelidon meyeni, Cab. Mus. Hein. Th. i. p. 48 (1850); Cass. Cat. Philad. Acad. p. 5 (1853); Burm. Th. Bras. iii. p. 141 (1856); Sclater, Cat. Amer. B. p. 40 (1862).

Hirundo leucorrhoa, pt., Bp. Consp. i. p. 341 (1850).

Hirundo meyeni, Baird, Review Amer. B. p. 302 (1865); Scl. P. Z. S. 1867, pp. 321, 337; id. & Salv. Ibis, 1868, p. 185, et 1870, p. 499; Gray, Hand-l. B. i. p. 72, no. 848 (1869); Scl. & Salv. Nomencl. Av. Neotr. p. 14 (1873); iid. P. Z. S. 1878, p. 432; iid. Rep. Voy. 'Challenger,' ii. Birds, p. 100 (1881).

Tachycineta meyeni, Salvin, P. Z. S. 1883, p. 420; Sharpe, Cat. Birds in Brit. Mus. x. pp. 116, 631 (1885).

T. suprà purpurascenti-cyaneus: uropygio albo: genis anticis maculâ nigrâ notatis.

Hab. in Americâ meridionali.

Adult. General colour above glossy purplish blue, with a broad white band across the rump; lesser and median wing-coverts like the back; greater coverts blackish, washed with blue externally: bastard-wing, primary-coverts, and quills blackish, with a dull bluish gloss; upper tail-coverts purplish blue; tail-feathers blackish, washed with steel-blue; lores and feathers below the eye velvety black, with a very narrow supraloral white line; head, ear-coverts, and sides of neck purplish blue like the back; cheeks and under surface of body white, with a dusky spot at the base of the cheeks; on the chest a slight shade of smoky brown; sides of upper breast brown, with a wash of purplish blue; sides of body also washed with pale smoky brown; axillaries and under wing-coverts smoky brown; quills dusky brown below, lighter on the inner webs. Total length 5·5 inches, culmen 0·35, wing 4·2, tail 2·1, tarsus 0·45.

The sexes are alike in colour, and a series measures as follows:—

	Total length.	Wing.	Tail.	Tarsus.
	in.	in.	in.	in.
a. ♂ ad. Chili (*Reed*)	5·0	4·2	1·95	0·45
b. ♂ ad. „ „	4·9	4·3	1·9	0·45
c. ♂ ad. „ „	5·0	4·25	1·8	0·45
d. ♂ imm. Coquimbo (*Markham*)	4·1	4·15	1·7	0·45
e. ♂ juv. Sandy Point ('*Challenger*')	4·6	3·8	1·75	0·40
f. ♀ ad. „ „	4·7	4·35	1·9	0·45

Young. Differs from the adult in being duller in colour, and much browner on the head and wings, with narrow ashy-whitish edges to the inner secondaries; supraloral white streak more distinct; throat tinged with sandy buff; fore neck and chest mottled with brown bases, and the centre of the chest with a distinct brown streak caused by the brown inner webs of the feathers; gape yellow.

Hab. Chili and Bolivia, Patagonia.

This species has much of the appearance of the Common Martin of Europe (*Chelidon urbica*), and Mr. Gould aptly remarked, in 1841 :—" Were it not for the bare legs of this little Martin, I should have some difficulty in discriminating between it and the one so well known as a summer visitor in our island." The structural characters of the species prove, however, that it is a member of the genus *Tachycineta*, which is strictly an American form.

Mr. Darwin met with this Swallow in Southern Patagonia, at Port Famine, in February, and found it breeding in holes in a cliff of earth. Dr. Cunningham procured specimens at Sandy Point in January, and in the same month and at the same place the naturalists on board the 'Challenger' likewise met with it.

This species probably winters in Chili; for Mr. Darwin found it near Valparaiso from August to September, and Capt. Markham at Coquimbo in November. Mr. E. C. Reed has sent several specimens from the province of Colchagua. A Bolivian specimen, procured by Mr. Bridges, and preserved in the Sclater collection, marks the highest northern range of this species, so far as is known at present.

We are not aware that any notes on the habits have yet been recorded.

Our descriptions are from specimens in the British Museum, and the figure has been taken from a bird in the Salvin-Godman collection.



C.W.W del.

Mintern Bros. imp

TACHYCINETA BICOLOR.

TACHYCINETA BICOLOR (*V.*).

WHITE-BELLIED SWALLOW.

Hirundo bicolor, Vieill. Ois. Amér. Sept. i. p. 61, pl. 31 (1807); Audub. B. Amer. pl. xcviii. (c. 1826); Swains. Faun. Bor.-Amer., Birds, p. 328 (1831); Audub. Orn. Biogr. i. p. 491 (1831); id. B. Amer. 8vo, i. p. 175, pl. 46 (1840); Gray, Gen. B. i. p. 58 (1845); Lembeye, Av. Cuba, p. 46 (1850); Wolley, Zool. 1853, p. 3806; Cass. Ill. B. Calif. p. 244 (1856); Brewer, N. Amer. Ool. p. 100, pl. 4 (1837); Jones, Nat. Bermuda, p. 34 (1859); Newton, P. Z. S. 1860, p. 131; Baird, Cass., & Lawr. B. N. Amer. p. 310 (1860); Blakist. Ibis, 1862, p. 4, 1863, p. 64; Gray, Cat. Brit. B. p. 33 (1863); Baird, Review Amer. B. p. 297 (1865); id. Ibis, 1867, pp. 273, 275, 289; Brown, Ibis, 1868, p. 420; Cooper, B. Calif. p. 106 (1870); Harting, Handb. Brit. B. p. 125 (1872); Scl. & Salv. Nomencl. Av. Neotr. p. 14 (1873); Maynard, B. Florida, p. 72 (1873); Baird, Brewer, & Ridgw. Hist. N. Amer. B. p. 344, pl. 16. fig. 8 (1874): B. O. U. List Brit. B. p. 43 (1883); Samuels, Our Northern and Eastern Birds, p. 257 (1883).

Hirundo viridis, Wils. Amer. Orn. v. p. 44, pl. 38. fig. 3 (1812).

Hirundo leucogaster, Steph. Gen. Zool. x. p. 106 (1817).

Chelidon viridis, Boie, Isis, 1826, p. 971, 1828, p. 316.

Hirundo prasina, Licht. Preis-Verz. mex. Vög. 1830, p. 2; Cab. J. f. O. 1863, p. 58.

Chelidon bicolor, Less. Compl. Buff. viii. p. 494 (1837); Bp. Comp. List B. Eur. & N. Amer. p. 8 (1838).

Chelidon leucogastra, Boie, Isis, 1844, p. 171.

Herse bicolor, Bp. Consp. i. p. 341 (1850).

Tachycineta bicolor, Cab. Mus. Hein. Th. i. p. 48 (1850); Gundl. J. f. O. 1861, p. 339; Allen, Bull. Mus. Comp. Zool. ii. p. 269 (1871); Coues, Key N. Amer. B. p. 113 (1872); id. B. N.-West, p. 86 (1874); id. B. Colorado Valley, p. 413 (1878); Ridgw. U. S. Geol. Expl. 40th Par. part iii. p. 441 (1877); Merrill, Proc. U. S. Nat. Mus. i. p. 125 (1878); Belding, t. c. p. 408 (1879); Sennett, Bull. U. S. Geol. Surv. iv. p. 15 (1878); Coues, t. c. p. 571; Hoffm. t. c. p. 220; Brewst. Bull. Nutt. Orn. Club, iii. p. 63 (1878), iv. p. 46 (1879); Scott, t. c. pp. 93, 142, 223 (1879); Mearns, t. c. p. 164; Loomis, t. c. p. 213; Cory, B. Bahama Isl. p. 80 (1880); Scott, Bull. Nutt. Orn. Club, vi. p. 115 (1881); Merriam, t. c. p. 229; Nehrling, op. cit. vii. p. 11 (1882); Hay, t. c. p. 91; Batchelder, t. c. p. 110; Brewster, t. c. p. 146; Belding, Proc. U. S. Nat. Mus. v. p. 537 (1883), vi. p. 343 (1883); Brewster, Proc. Bost. Soc. N. H. xxii. p. 372

(1883); Salvin & Godman, Biol. Centr.-Amer., Aves, i. p. 235 (1883); Sharpe, Cat. Birds in Brit. Mus. x. pp. 117, 631 (1885); Hensh. Rep. Zool. Expl. 100th Mer. p. 217 (1875); Drew, Auk, ii. p. 15 (1885); Turner, Proc. U.S. Nat. Mus. viii. p. 239 (1885); Agersb. t. c. p. 278; Turner, Contr. N. H. Alaska, no. ii. p. 177 (1886); Anthony, Auk, iii. p. 170 (1886); Everm. t. c. p. 183; Fox, t. c. p. 317; Thompson (Seton), t. c. p. 325; Dwight, Auk, iv. p. 16 (1887); Beckham, t. c. p. 304; Ridgw. Man. N. Amer. B. p. 461 (1887); Nelson & Hensh. Rep. N. H. Coll. Alaska, no. iii. p. 198 (1887); Warren, B. Pennsylvania, p. 206, pl. 38 (1888); Scott, Auk, v. p. 31 (1888); Faxon & Allen, t. c. pp. 150, 152; Chapm. t. c. v. p. 275; Merrill, t. c. p. 360; Brewster, t. c. p. 389; Everm. Auk, vi. p. 26 (1889); Faxon, t. c. p. 102; Brittain & Cox, t. c. p. 118; Dutcher, t. c. p. 130; Cory, B. W. Ind. p. 71 (1889); Cooke, Rep. Migr. Miss. Valley, p. 229 (1888).

Petrochelidon bicolor, Cass. Cat. Hirund. Mus. Philad. Acad. p. 4 (1853); Scl. P. Z. S. 1857, p. 201, 1859, p. 364; id. & Salv. Ibis, 1859, p. 13; Brewer, Proc. Bost. Soc. vii. p. 306 (1860); Scl. Cat. Amer. B. p. 40 (1862).

Iridoprocne bicolor, Coues, B. Color. Vall. p. 412 (1876); Drew, Bull. Nutt. Orn. Club, vi. pp. 88, 115 (1881); Coues, ed. Stearns's N. Engl. Bird-life, i. p. 183 (1881); Merriam, Bull. Nutt. Orn. Club, vii. p. 235 (1882); Coues, Check-list, p. 42 (1882); id. Key N. Amer. B. p. 322 (1884).

Hirundo bicolor, var. *vespertina*, Cooper, Amer. Nat. x. p. 91 (1876); id. Proc. U. S. Nat. Mus. ii. p. 246 (1880); Ridgw. Proc. U. S. Nat. Mus. iii. p. 234 (1880).

T. uropygio dorso concolore: suprà nitenti-viridis, supracaudalibus dorso concoloribus: subtùs albus.

Hab. in regione Nearcticâ fere totâ, et in sub-regione Centrali-Americanâ hiemante.

Adult male. General colour above glossy steel-blue, greener on the head, the scapulars like the back; lesser and median wing-coverts steel-blue; greater coverts, bastard-wing, primary-coverts, and quills blackish, the former edged and the latter glossed externally with steel-blue, duller on the primary-coverts and quills; tail-feathers blackish with a steel-blue gloss; lores and feathers below the eye velvety black; upper edge of the ear-coverts and sides of the neck steel-green like the head; cheeks, remainder of ear-coverts, and entire under surface of body white, with a patch of brown glossed with steel-green on the sides of the upper breast; axillaries and under wing-coverts smoky brown, those near the edge of the wing dull whitish; quills below dusky brown: "bill black; interior of mouth pale yellow; feet dark purplish brown" (*R. Ridgway*). Total length 5·3 inches, culmen 0·35, wing 4·55, tail 2·25, tarsus 0·45.

Adult female. Similar to the male: "bill black; interior of mouth fleshy white; tarsi and toes dark sepia, the latter pinkish beneath" (*R. Ridgway*). Total length 5 inches, culmen 0·3, wing 4·6, tail 2·1, tarsus 0·45.

In the British Museum 'Catalogue of Birds' we suggested that the winter plumage was greener than the breeding-plumage, and having now examined the fine series in the Henshaw collection, we believe that this is absolutely correct. Thus when the breeding-season approaches there is

no spring moult, but the green colour gives way to a beautiful steel- or violet-blue. This is true of the males and of the old females; but we fancy that the latter take much longer in arriving at the full metallic plumage than do the males, which probably arrive at perfection in their first spring. Mr. Brewster has drawn attention to the white fringes of the secondaries, which he believes to be an accompaniment of the winter plumage of the old birds as well as of the young, and this seems to be confirmed by the examination of the specimens in the Salvin-Godman collection; but these white tips are speedily cast when the spring plumage is complete and the birds are in their summer haunts. After the autumn moult the upper tail-coverts are tipped with ashy or whitish margins, and, curiously enough, these white edges sometimes accompany the bird on its return journey in summer, and are even occasionally developed in a high degree.

Young. Very different from the adults and without metallic gloss. General colour above sooty or mouse-brown; the wing-coverts and quills like the back; lores blackish; ear-coverts like the head; cheeks, throat, and under surface of body white; fore neck and chest pale mouse-brown, darker on the sides of the chest and flanks: "bill black; rictus and interior of mouth yellow; feet dark livid sepia or light pink; iris brown" (*R. Ridgway*).

A good series of young birds is contained in the Henshaw collection, the earliest bearing the date of July 4th. Mr. Brewster observes:—"The first plumage is worn much longer than in most birds, and the autumnal dress very slowly acquired, the metallic tinted feathers appearing one or two at a time. The remiges are also moulted by the young as well as by the adult, and both in the autumnal plumage have the last pair of secondaries broadly tipped with pure white. This remarkable feature, so far as the specimens at hand go to show, is entirely characteristic of this plumage." Again, in the autumn of 1879, he continues:—"From investigation of material collected during the past season I find that the change takes place from about the middle to the last of September. Six specimens shot at Concord, Mass., October 16th, 1878, have all acquired the full autumnal dress."

In the Henshaw collection, however, are specimens which are commencing to moult on the 14th and the 27th of August, and an old female killed in the same month and at the same place (Sing-Sing, N.Y.) has almost completely donned its winter plumage, including the white-tipped secondaries; the longest primaries have not yet been shed. One male, killed at Cambridge, Mass., on the 30th of September, and marked by Mr. Henshaw as a male in its first winter plumage, is entirely green above, with well-marked white margins to the inner secondaries and upper tail-coverts, and has a shade of brown over the fore neck and chest. This is also seen in young birds in the first plumage, but every sign of it disappears in the spring dress. It is probable that the earlier moulting birds are those of the earlier hatched broods.

A *female* killed by Mr. Nelson at St. Michael's, Alaska, on the 24th of May is brown above, with very little gloss left; and this may prove that, as we have above suggested, the females do not acquire their full brilliancy of plumage in the first spring. Certain it is that some females are fully as brilliant as any males, but they may take really two or three years to acquire this perfect dress. Or it may be that the wear and tear of the journey to the far north and the more rigorous climate may cause an early abrasion of the metallic plumage.

Hab. Nearly the whole of North America, but its exact northern range is not yet determined. Wintering in the Gulf States and in Central America, as far as Guatemala, in Bermuda, the Bahamas, and Cuba.

We have had considerable difficulty in discovering the exact range of the present species in North America, on account of the wide extent of country over which it appears to be spread, but from which no ornithologist has sent records. This is especially the case with the northern range of the bird, so that a considerable portion of the nesting-habitat of the species as given in the accompanying map, is purely problematical. We have submitted our map of the distribution of the bird to Dr. Elliott Coues and Mr. J. A. Allen, and the eastern and western limits of the breeding-range are given in exactly similar lines by both those distinguished ornithologists. The central limit is fixed by Mr. Allen somewhat more to the southward than by Dr. Coues, and the reason is stated in a letter which the former gentleman has kindly sent us:—"In the States east of the Mississippi River it breeds south nearly to the Ohio River, at least sparingly; and thence further westward through the greater part of the States of Missouri and Kansas, and southward from Eastern Kansas across the Indian Territory and Eastern Texas to the Lower Rio Grande, and thence again westward near the Mexican Boundary-line to Southern California. It has been observed in the breeding-season at St. Louis, Mo., and at Galveston and Corpus Christi in Texas, and is doubtless more or less common where there is sufficient timber to furnish nesting-sites westward throughout the interior to the Pacific Coast. I have marked a line on the map to indicate what I believe may be safely taken as its *approximate* southern breeding-limit. It is, of course, not present over large areas of the treeless plains of the interior, except as a rare migrant."

Commencing with the range of the White-bellied Swallow in the far north, we find the following note of Mr. L. M. Turner's:—

"On several occasions I observed this Swallow flitting about the buildings at St. Michael's, Alaska, during the month of August and early in September. The lateness of the season led me to conclude that they were birds having reared their young in the interior portions of the country, and were now on their way to the southward, preferring, through some freak of fancy, to return by the coast rather than the interior. At the trading-station on the Nushagack River I saw a great many, certainly a dozen pairs, of these birds, swiftly scouring the edges of the river-banks and upper dry lands to feed on the myriads of insects which are to be found there. This bird was not observed in any other portion of the country."

Mr. Nelson writes:—"Although having even a wider northern range than the Barn-Swallow, this bird does not accept the shelter afforded by man, but retains its ancient habit of occupying holes in banks or trees, and, as a consequence, its distribution along the Arctic coast and shores of Bering Sea is limited to those portions where the proper positions for its nesting-sites are afforded. At the Yukon delta, the 1st of June, 1879, and at St. Michael's, on the 24th and 25th of May, 1880, they were common, and although they nest at the former place, where the river-banks and dead tree-trunks afford them proper sites, yet in the latter place they are unknown, except as visitants in fall or during the spring migration, when, as on the dates mentioned, they were found

quartering over a series of small lakes and grassy flats, hunting insects and enjoying the genial sunshine, which lasts for a short time at this season. They are also found as stragglers, generally the young birds of the year, for a few days during the middle of August, when they depart, thus leaving for the south or its interior haunts considerably earlier than the Barn-Swallow. Richardson found them nesting in hollow trees on the Mackenzie River, in latitude 65° north, and during Parry's first voyage a species of Swallow was seen in about latitude 73° north, which was probably this bird. In the spring, during their short visits to St. Michael's, they occur during the same season as the Black Brant; and while lying prone on my back upon a grassy knoll, on the open tundra, watching for Geese, I have frequently amused myself by observing the silent flitting to and fro of these pretty creatures as they skim the surfaces of lakelets and bogs, gliding here and there as if floating on the faint puffs of air which appeared to hold them poised, and then to waft them about in graceful curves. The icy sea and partly snow-covered country appeared to offer a very inhospitable welcome in spring, yet this bird and the Barn-Swallow do not seem to suffer the least inconvenience from these untoward surroundings. This species is unknown on the islands of Bering Sea." Dr. Murdoch did not observe the species at Point Barrow.

Captain Blakiston first met with a specimen at the forks of the Saskatchewan on the 17th of May. He observes:—"My specimen was, I believe, the first recorded from the interior, as it is only mentioned as having been observed in the 'Fauna Boreali-Americana.' Since that, however, Mr. Ross has observed it on the Mackenzie, as far north as the Arctic Circle. In 1858 the White-bellied Swallow was first seen by myself at Fort Carlton, on the 23rd of April; but I was told of Swallows on the 21st. They were numerous early in May; and on the 17th I found a great number of them congregated about a small lake or pond entirely surrounded by old woods and willows, with its edge margined with long grass. After a time the whole congregation alighted on a couple of dead willow-bushes about eight feet from the ground. I found these birds common on the Saskatchewan during the whole summer, and at the eastern base of the Rocky Mountains, near the international boundary, on the 7th of September."

For the following notes on the species in Canada we are indebted to our excellent correspondent, Mr. Ernest Thompson, who has been collecting observations from various friends for some years past.

"*Distribution in Ontario*:—

"*London and vicinity.* Common, breeding chiefly in the country. Ten years ago, not only this, but Barn- and Eave-Swallows (as well as the Chimney-Swift) and Martins were very abundant in London, scouring our main business streets all day for flies. But the English Sparrow now invades their homes in early spring, and we have but very few in the city, though

I notice little general change in the country, and that only in the Cliff-Swallow (*W. E. Saunders*).

" *Hyde Park.* Summer resident (*John A. Morden*).

" *Listowel.* Common (*W. L. Kells*).

" *Hatchley, Brant Co.* Occurs (*W. Yates*).

" *Hamilton.* A common summer resident, arriving early in May and leaving about the middle of September (*T. McIlwraith* in ' Birds of Ontario ').

" *Toronto.* A common summer resident. Ten years ago it bred in the city abundantly, but has been ousted by the English Sparrow.

" April 22nd, 1885. White-breasted Swallow arrived in force; shot ♂, gizzard contained several specimens of *Aphrodius* and small Carabidæ.

" April 16th, 1887. White-breasted Swallow arrived.

" *Lorne Park,* April 6th, 1888. Two White-breasted Swallows seen.

" *Ellora.* Summer visitant, abundant (*Hon. Charles Clarke*).

" *Bruce Co.,* central region. Occurs (*W. A. Schoenan*).

" *Millbrook.* Summer resident, abundant, noted first 11th April, 1885 (*George Sootheran*).

" *Coboconk.* Noted by myself as common there in June 1885.

" *Peterboro'.* Tolerably common (*Rev. V. Clementi*).

" *Yarker.* Summer resident, abundant, March 28th to April 17th (*John G. Ewart*).

" *Belleville.* In 1881 arrived April 22nd (*Prof. G. Macoun*).

" *Kingston.* Abundant (*Dr. C. K. Clarke*).

" *Ottawa.*

" *Distribution in Province of Quebec.*

" *Montreal.* Summer resident, abundant (*W. W. Dunlop*).

" *Point de Monts.* Common, breeds plentifully; first seen May 12, 1882 (*Dr. C. Hart Merriam,* Bull. Nutt. Orn. Club, vii. p. 235).

" *Co. Quebec and N. to Lake St. John.* Summer resident, abundant (*John Neilson*).

" *Distribution in Manitoba and the North-west.*

" *Carberry.* Very common, breeding in hollow trees, usually in the vicinity of water. Arrived May 3rd, 1882; last seen Sept. 16th of same year, though it apparently goes southward a week or two earlier. First seen in 1883 on May 7th, noted on 14th August of same year in flocks, flying southward. Arrived May 3rd in 1884.

" My own observations would lead me to describe this species as a common summer resident, breeding in suitable places, *i. e.* wooded country near water throughout Western Manitoba.

" *Winnipeg and vicinity.* Summer resident, abundant (*R. H. Hunter*).

" *Qu'Appelle.* Summer visitant about 10th May and breeds (*G. F. Guernsey*).

" *North-west* (*i. e.* region immediately west of Manitoba). Abundant (*Prof. J. Macoun*)."

Dr. Elliott Coues observed the species only at Pembina, where it was breeding in small numbers about the Fort, together with large colonies of Cliff-Swallows. Mr. Agersborg found it very rare in South-eastern Dakota.

Throughout the northern portions of Labrador Mr. Lucien Turner reports it as plentiful, and says that it was common at Big Island in the Kohsoak River, near Fort Chimo, where it breeds abundantly. Mr. Brewster noticed two specimens at Anticosti on the 9th of June. Mr. Dwight records it as a summer bird in Cape Breton Island; but in the Restigouche Valley in New Brunswick it is said by Messrs. Brittain and Cox to be rare, and seen only in the vicinity of the settlements. Mr. Batchelder, in his paper on the birds of the Upper St. John's River, states that it was common in suitable localities at Grand Falls, but none were seen about the town; it was abundant at Fort Fairfield.

With regard to the distribution of the White-bellied Swallow in the United States, we have endeavoured to give some of the principal notices which have been published in well-known and accessible works, but the literature of Nearctic birds is now so enormous and is so widely diffused that it is quite possible that some accounts of the present species have escaped our researches, and we shall be glad of any corrections and additions to our history of the species.

Dr. Hart Merriam states that it is the commonest Swallow in the Adirondack region. It was not common in June on the Squam Lake near Holderness, New Hampshire, but was more plentiful in Franconia in June and July, as recorded by Messrs. Faxon and Allen in the 'Auk' for 1887. Mr. Samuels, in his work entitled 'Our Northern and Eastern Birds,' writes :—

"This very common and well-known species is a summer inhabitant of all New England, being most abundant in localities near sheets of water, and less common in high, dry districts. Its habits are well known, and arriving, as it does, early in the season, and fraternizing with man, it is a great favourite. It makes its appearance as early as the first week in April, but does not commence building before the middle of May. Near cities and towns, the nest is built in Martin-boxes provided for its reception; but in less thickly settled districts it is built in holes in stumps and trees; and cases are on record of its being built in a deserted nest of the common Barn-Swallow. When passing through the chain of the Umbagog lakes in Maine, I observed great numbers of these birds whose nests were built in holes in dead trees standing in the lake near the shores. These nests were so plentiful, that, in the area of about ten rods square, I counted over fifty. Of course the birds were in myriads, and the species constitutes the Common Swallow of the districts in that latitude. The materials used in the construction of the nests are fine grasses, hay, and feathers; these are adjusted loosely in the cavity of the tree, and without any form. The eggs are, most commonly, five in number. Their colour is a beautiful clear white, with a roseate tint before their contents are removed; they are extremely thin and fragile, much more so than in most of the

other species; and their form is a slender oval. Of a great number of specimens collected in various localities, the largest is ·79 by ·56 inch, the smallest is ·69 by ·51 inch. Two broods are generally reared in the season, and the period of incubation is fourteen days.

"This species leaves New England in full migration about the 10th of September."

The following note is published by Dr. Coues from Mr. Stearns's MSS. on New England Bird-life:—

"A common summer resident, and more equably distributed over New England than the Barn-Swallow, as it is less dependent upon man for breeding-places, and less gregarious during the nesting-season. Though the White-bellies often accept the boxes set up for their accommodation, it is not always easy to induce them to occupy such artificial retreats, and in some places they still refuse to modify their primitive habits of breeding in natural excavations of trees and stumps. Sometimes they compromise on a hole in a post or fence. They are consequently found in remote and secluded woods and swamps, as well as about the habitations of man; and display a certain taste for aquatics in frequently choosing 'stubs' standing in the water for nesting-places, in their immense autumnal gatherings in the salt marshes of the coasts, and in being very numerous about ponds and other fresh water away from houses. They reach New England somewhat in advance of the Barn-Swallows, coming in full force early in April, and in the fall they linger through the greater part of September; but the weather has much to do with their movements. The nest is built of hay without mud, and lined with feathers. The eggs are pure white, without markings, and from ·70 to ·78 long by ·50 to ·55 broad."

Mr. Maynard writes:—"It arrives in New England the earliest of all the Swallows. Here they have a song, which is, however, not as clear and warbling as that of the Barn-Swallow; their flight is also heavier, neither do they move as swiftly. These birds breed in Martin-boxes, holes in out-buildings, or in hollow stubs; while nesting in the last-named situation, they usually choose a hole formed by nature, but I found a colony busily engaged in excavating domiciles in partially decayed birch stubs, which stood in the waters of Lake Umbagog, Maine. The work was performed by the bills, not after the manner of Nuthatches, Titmice, &c., but by simply breaking away small pieces of punky wood, and removing them.

"White-bellied Swallows deposit their eggs during the first week in June. The young leave their nest early in July. After this time they all congregate on the sea-shore in vast flocks. During some years the numbers which assemble in early autumn are almost incredible, for I have seen the air over the broad marshes of Ipswich so filled with them that it was impossible to discharge a gun in any direction without killing one or more. I always imagined that the great number of insects which occur near the salt water, in the latter part of summer, was the cause of this vast concourse, until I discovered another reason. I was walking about the hills near the coast one day in August, when I observed large numbers of White-bellied Swallows hovering over some bay-berry

bushes (*Myrica cerifera*) which grow abundantly in this section. Curious to know what they were doing I shot several, and was much surprised to find their crops and stomachs filled with the aromatic berries. This fruit is about the size of unground black peppers, and is coated with a waxy substance, of which the bay-berry tallow is made. This was formerly used for manufacturing candles; indeed it is now used for this purpose in some sections of the country. I have since taken many specimens, and found that it is a confirmed habit of this species to feed on the bay-berry. An examination of the fruit in the process of digestion shows that only the outer waxy covering is consumed, the inner or harder portion being voided. It is probable that this substance is highly nutritious, as the birds become very fat through feeding upon it. The great mass of White-bellied Swallows depart early in September, but a few remain later than any other members of the family. The last straggler, however, disappears by the middle of the month."

Mr. B. H. Dutcher, in his notes on the birds of Little Gull Island, New York, says that between the 6th and 16th of August flocks were seen every day migrating southwards, and that they followed the same line as *Hirundo erythrogastra* in their flight from the mainland, viz. from Fisher's Island to Little Gull, Little Gull to Great Gull, Great Gull to Plum Island, and so to Long Island.

Mr. Brewster mentions it among the species which breed near Winchendon, Mass.; and Mr. Walter Faxon, in his paper on the birds observed by him on the Graylock Mountain between the 28th of June and the 16th of July, states that he saw a few individuals in the village of North Adams, the only ones observed by him in Berkshire county.

Mr. W. E. D. Scott, writing in 1879 on the birds noticed at Long Beach, New Jersey, states that it was a common migrant there, but bred very rarely. The first was seen on the 7th of April, and it was not noticed again till the 15th of that month. A pair bred on the northern extremity of the beach, near the lighthouse. Large numbers were seen on the 16th of November, 1880, at Squam Beach, New Jersey, and Mr. Scott writes of this abnormal visit:—"The Swallows had been abundant for the previous two days, though the temperature was unusually low for the time of the year. They were feeding on the bay-berry (*Myrica cerifera*) in such numbers that Mr. Hardenbergh secured fifteen birds at a single shot. The birds were brought to me, and at least three quarters are in immature plumage."

"In Pennsylvania," writes Mr. Warren, "the Tree-Swallow arrives late in March or early in April, and leaves in September. It is common and very generally distributed during migration. As a summer resident it is restricted chiefly to localities about rivers." Mr. Evermann states that in Carroll County, Indiana, it is a migrant and not very common.

Mr. Fox, in his list of birds from Roane County, Tennessee, gives the present species as not common, first seen on the 1st of April, 1884, and a few during April 1885. Mr. Loomis found it migrating only in South Carolina.

Mr. Maynard, in his 'Birds of Florida,' writes:—"The White-bellied is the only

Swallow that I have ever seen in Florida during winter. They are quite abundant there, but as soon as they move across the country in large straggling flocks, are not often seen in one locality for many days in succession. While in this State they do not utter a note, but skim silently over the large inland lakes or sail above the almost limitless pine-woods. In early spring they leave for the north."

Mr. Chapman, writing from Gainesville, Florida, states that the species was abundant up to the date of its departure, May 6th. Mr. Wyatt only met with the species on two occasions during his three months' stay in Florida. A good many were flying over Lake Monroe early one morning, but in the afternoon they had disappeared. In January he observed a few on Indian River, flying over the palmetta-scrub on the banks of the river.

In his interesting report on Bird Migration in the Mississippi Valley in the years 1884 and 1885, Mr. W. W. Cooke writes as follows:—

"Breeds abundantly in Manitoba and most parts of the Mississippi Valley. This is the only Swallow which winters regularly and abundantly in the United States. From its winter-quarters in the Southern States it spreads north, the earliest of its tribe. Indeed, so early is its migration, that it is often overtaken by snow-storms, before which it usually retreats, though sometimes it remains to brave the elements. At Gainesville, Tex., in the spring of 1884 it did not arrive until April 30, though in former years it has been known to come by March 3. Nearer the Mississippi River, migration must have started early in March, probably when the warm wave set in, March 8 and March 9. A single bird was seen at Burlington, Iowa, March 10, but the regular advance occurred about two weeks later. If records of first arrivals are to be relied upon they show that the migration of this Swallow took place much earlier east of the Mississippi than west of it. In Illinois, Ill., March 24 and 26; at Lake Mills, Wis., April 4; and at West De Pere and Green Bay, Wis., April 6. West of the Mississippi the first was reported from Coralville, Iowa, April 19th, and Lanesboro, Minn., April 27. Two days later the first came in hundreds to Heron Lake, Minn., when the sun shone in the afternoon after a cold rainy forenoon. The first reached Pine Bend, Minn., May 2, and Frazer City, Minn., May 26. Still further west migration was earlier than along the central line. At Argusville, Dak., it was seen May 5; and at Oak Point, Manitoba, May 3.

"In the spring of 1885 the same warm wave which brought the Martins to the Upper Mississippi Valley induced many White-bellied Swallows to visit Missouri and Illinois.

"During the last two days of March and the 1st day of April they appeared at Saint Louis, Mo., Paris, Ill., and Fernwood, Ill.; April 4, they were seen at Milwaukee, Wis.; April 5 at Green Bay, Wis.; April 7 at Lanesboro, Minn.; April 11 at Minneapolis, Minn.; and April 28 at Oak Point, Manitoba. At Saint Louis, Mo., the last one was seen April 29; at Mount Carmel, Mo., May 2; and at Des Moines, Iowa, May 8. Some very late birds were recorded at Bonham, Tex., May 6, and at Gainesville, Tex., May 12.

"In the fall of 1885, at Saint Louis, Mo., the first returned September 8; many passed October 5; they were most numerous October 9, and left October 26. They had left Grinnell, Iowa, September 16."

Dr. Elliott Coues states that the present species appears to be rarer in the Missouri region than the other Swallows are, or than it is in most other parts of the United States, much of the country being not well suited to its wants. It is occasionally seen in the Southern States in mid-winter. Mr. W. E. D. Scott says that in Western Missouri it was common and migratory, being first noted on the 3rd of April. Mr. F. H. King records its occurrence on his journey east from the Rock River, north of Jefferson, the route lying alternately through pieces of heavy timber and across dry cultivated fields.

Audubon mentions its occurrence near New Orleans, where he saw it in numbers every day during the whole winter. In the evening many sought the shelter of the houses, where they roosted in holes, but the majority frequented the lakes and roosted among the branches of the candleberry myrtle. Mr. Beckham states that he first observed the species at Bayou Sara, in Louisiana, on the 9th of April, and a considerable number were seen there on the 23rd of the same month.

In Southern Texas Mr. J. C. Merrill found this Swallow common during migrations, and he believes that some of them must pass the winter at no great distance, as he has frequently seen small flocks in November, December, and January, after a few warm days. Mr. Nehrling says that he has met with a few examples during summer on the borders of woods. Mr. Sennett considers it a winter bird, and it must certainly breed in a few isolated localities only. He writes:—"Numbers were seen on our way down the coast from Indianola to Point Isabel. They were also seen about the lagoons in the vicinity of Brownville up to about April 18th, after which time none were observed."

Mr. Henshaw, in his report on explorations on the 100th parallel, writes:—

"Found at Fairfield, Utah, early in August, and at Provo in same month. Rather common. In Southern Colorado, the species was not uncommon, though perhaps the rarest of the Swallows. Here, instead of being found near the habitations of man, it appeared to seek the solitude of the wild districts, and, in company with *Tachycineta thalassinus*, to find a home in the hollows of trees and deserted Woodpeckers' holes. Its presence was not detected at a higher elevation than 8000 feet. Captain Bendire informs me that this species occurs about Tucson as a summer visitor, and breeds."

Mr. Ridgway obtained specimens at Carson City in Nevada, in March, and at Truckee Bottoms in May; again, at Salt Lake City in May, and at Parley's Park, Wahsatch Mountains, Utah, in July. He gives the following account of the species:—

"This species and the Purple Martin were the only Swallows which were confined to wooded districts or to settlements, their distribution being much the same, except that, in the case of wooded localities, the former was most abundant in the river-valleys, while the latter occurred oftenest on the mountains. Among the cotton-woods of the Lower Truckee, near Pyramid Lake, in May, the White-bellied Swallow abounded more than

elsewhere, and every knot-hole or, rather, cavity among the trees seemed to have been taken possession of by a pair. They were then engaged in building their nests, and throughout the day would come to the yard door of the reservation-house to pick up the feathers or bits of rag or paper scattered about the ground, after hurriedly seizing which they would fly with the article selected in a direct line to their nests. As they sat on the ground they were beautiful little birds, and though they squatted somewhat awkwardly, on account of the smallness of their feet, they raised their heads so proudly, and glanced so sharply, yet timidly about them, that they seemed graceful in their motions; while each movement caused the sunlight to glance from their burnished backs of lustrous steel-blue, with which the snowy white of their breasts contrasted so strikingly. Although the object picked up was most often a feather, it occasionally happened that one would take hold of a string or a long shred of cloth, perhaps a yard or more in length, in which case so conspicuous an object was certain to be seized upon by others, as the bearer laboured to carry it to his nest, thus becoming the subject of quite a struggle, and much twittering.

"The White-bellied Swallow was by no means confined to the wooded river-valleys, however, but it was equally abundant among the aspen woods high up in the Wahsatch Mountains, at an altitude of 8000 or 9000 feet. It was also common in the Sacramento Valley, but a few feet above the sea-level, among the oak-trees of the plain. Neither is it invariably arboreal, for it seems to have become, in certain localities, more 'civilized,' like its cousin the Purple Martin, and to have taken advantage of the abode of man in localities where there are no trees to accommodate them. Such was conspicuously the case at Carson City, where they were quite numerous, and built their nests under the eaves, behind the weather-boarding, or about the porches of dwellings or other buildings, and were quite familiar. The specimens collected were shot on the wing, and when one was brought down, the rest would exhibit great concern, circling about the victim and uttering a plaintive twitter, as their suffering companion lay fluttering on the ground."

Mr. Hoffmann gives the following note on the White-bellied Swallow in Nevada:—"Mr. Ridgway found this species on the Wahsatch Mountains, at an altitude of 8000 or 9000 feet. Its occurrence in Nevada is also noted, more especially throughout the western portion of this State, near Pyramid Lake, Carson City, &c. They are not very gregarious during the breeding-season, and but few are found together at any particular locality at that time, though later in the season they have been found in large flocks, probably preparatory to migration."

In Colorado, according to Mr. Drew, it breeds from the plains up to 10,000 feet, and is found in spring and summer from 8000 to 11,000 feet. It remains there until September. At Twin Lakes, Colorado, it was found by Mr. Scott to be common, breeding in deserted Woodpeckers' holes and suitable localities. On the 24th of June he saw pairs building, by the 29th incubation had begun in several cases, and on the 4th of July he found a nest with six eggs slightly incubated.

In Arizona it is apparently rare, according to Mr. Scott, who saw small numbers of individuals on the 10th of March, and he only observed it near Tucson in early spring. Mr. Brewster has, however, recorded it as common on the migration in Arizona.

On the western side of North America, Dr. Elliott Coues believes that it breeds anywhere, and it has been taken in all districts apparently. Mr. Brown records it from Vancouver Island. In Washington County, according to Mr. Anthony, it is an abundant summer resident and builds in hollow trees, stubs, and Woodpeckers' holes. Near Fort Klamath, in Oregon, Mr. Merrill has both found it a plentiful species and breeding; it arrives about the 4th of April in small flocks, and is abundant by the middle of the month.

Dr. Cooper gives the following note in his 'Ornithology of California':—

"This Swallow is to some extent a constant resident in California, a few wintering probably in the extreme southern portion. I first noticed their appearance at Stockton on February 22nd, 1863, and was informed by Dr. Holden that it does not vary more than three days from that date usually. On February 21st, 1862, I saw the first Swallows near San Diego, probably of this species; but they have such powers of flight that they might spend the nights of winter a hundred miles from where they feed at midday. When first arriving they fly so high that it is difficult to distinguish the species. They are the hardiest of all our Swallows, extending their range northward at least to lat. 53°, east of the Rocky Mountains, and preferring the neighbourhood of the coast and mountain-tops in this State. On the summit of the coast-range I found them taking the place of the Barn- and Cliff-Swallows, and have seen what I supposed to be this species flying above the summits of the Sierra Nevada as late as September 25th, at an elevation of probably 9000 feet above the sea, migrating towards the south. In this State they generally build in the knot-holes of oaks and other trees, but in older settled regions they have been known to prefer the advantages of an old building, or the little dwelling you put up for the Martins and Blue-birds. The nest is made entirely of fine grass, lined with feathers, and the eggs, four or five in number, are pure white. They commonly raise two broods in a season. Five or six pairs of this species wintered at Santa Cruz, and others about sheltered ponds in the vicinity, where I saw them in January, 1866, during the coldest weather of the season. Those at the town roosted in the same knot-holes in the houses where they had raised their young, so that they were probably constant residents there, and not visitors from the north. Like all the Swallows, however, they seemed to depart about September 1st, probably on account of the scarcity of insects during the latter part of the dry season. In September, 1865, I saw a few, probably of this species, near Tulare Lake, where they doubtless found food more abundant."

In his paper on the migrations and nesting-habits of West-Coast birds, the same observer gives the following details of the present species:—

"Camp Mojave, Colorado Valley, 500 feet; lat. 38°. Arrived Feb. 21.

"Santa Cruz, 50 feet; lat. 37°. Leaves Sept. 2.

"Saticoy, 50 feet; lat. 34° 27′. Seen May 14.

"Haywood (east side of San Francisco Bay); lat. 37° 40′. Arrives Jan. 28–30.

"Shot at San Francisco, winter of 1854 (*Cutts*).

"N. Sacramento, May 1853 (*Hepburn*). Two broods."

Mr. Evermann says that in Ventura County, in California, it is an abundant summer resident. Many breed in the holes of the willows near the mouth of the Santa Clara river.

Mr. L. Belding, in his notes on the birds of Central California, observes:—"This bird was seen at Marysville, February 1, 1878, and nearly every day thereafter until March 5. During the following March and April it was very abundant at Stockton, flying over the country in all directions, especially over the tule swamps. In May, when it was less abundant, I noticed two nests in casings over doors of private dwellings. I have not recognized it at Murphy's or Big Trees. A large scattered flock was seen at Stockton as late as December 5, 1878." He also states that it was often seen by him in winter in Lower California.

The Central-American range of the species is well given in the 'Biologia Centrali-Americana' by Messrs. Salvin and Godman, who have a considerable series from Mexico in their collection. The precise localities where the species has been obtained in that country appear to be the following:—Guaymas, Sonora, December and April (*L. Belding*), Matamoras (*Couch*), Mazatlan (*Grayson*), Plateau of Mexico (*Sumichrast*, *Le Strange*), San José (*Sallé*), Jalapa (*de Oca*), Orizaba (*Sumichrast*), Pine-ridge above Mirador (*Sartorius*). Messrs. Salvin and Godman write:—"There is no positive evidence of the species breeding in Mexico, though it is included by Prof. Sumichrast amongst the resident birds of the Plateau of Mexico, and a specimen was obtained by Dr. Sartorius in the pine-region above Mirador, in the month of June. In Guatemala it is a winter visitant to the tablelands and to the neighbourhood of San Gerónimo in Vera Paz, where it is frequently found associating with *T. thalassinus*."

It has not yet been recorded from Yucatan, but may possibly cross that country on migration, on its way to and from Guatemala. It may be also the species mentioned in Henderson's 'Honduras' (London, 1809, p. 119), and quoted by Dr. Coues in his 'Birds of the Colorado Valley':—"Myriads of Swallows are also the occasional inhabitants of Honduras. The time of their residence is generally confined to the period of the rains, after which they totally disappear. There is something remarkably curious and deserving of notice in the ascent of these birds. As soon as the dawn appears, they quit their place of rest, which is usually chosen amid the rushes of some watery savannah, and invariably rise to a certain height, in a compact spiral form, and which at a distance often occasions them to be taken for an immense column of smoke. This attained, they are then seen separately to disperse in search of food, the occupation of their day. To those who may have had an opportunity of observing the phenomenon of a waterspout, the similarity of evolution, in the ascent of these birds, will be thought surprisingly striking. The descent, which regularly takes place at sunset, is conducted in much the same way, but with inconceivable rapidity. And the noise which accom-

panies this can only be compared to the falling of an immense torrent, or the rushing of a violent gust of wind. Indeed, to an observer, it seems wonderful that thousands of these birds are not destroyed, in being thus propelled to the earth with such irresistible force." Although Dr. Coues thinks it probable that the above note refers to the White-bellied Swallow, we cannot help an impression that the species intended must have been a Swift of some sort.

Messrs. Jones and Wedderburn have mentioned its occurrence in the Bermudas. The former states that a great flight of Swallows appeared on the 22nd of September, 1849, when this species was numerous, although never previously observed.

Dr. Gundlach records the species as a regular winter visitor to Cuba, where it arrives later than *Hirundo erythrogastra*, remaining for the winter and leaving again in April; and in his work on the birds of the Bahamas Mr. Cory writes:—

"I have included this Swallow on the authority of Mr. L. J. K. Brace, of Nassau, who says: 'During the stormy weather of December 1st and 2nd of last year, a number of these birds were to be seen flying about. On the 1st, I only saw three, but on the 2nd a great many, which flew very low, close to the ground; two flew inside the house, and clung for a few minutes to the edge of a shelf, but before they could be secured, flew out again. On the 4th, the weather moderating, not one was to be seen.' It is exceedingly unfortunate that a specimen was not killed, as the resemblance, even at a short distance, of the Bahama Swallow to the present species is so close as to render identification difficult, and the capture of a specimen would have removed all doubts of its identity."

The White-bellied Swallow has also occurred once in Great Britain. Wolley records a specimen in the 'Zoologist' for 1853 (p. 3806):—

"Some months ago my friend, Mr. John Evans of Darley Abbey, sent for my inspection, and afterwards kindly presented to me, the skin of a sort of Swallow whose name he had not been able to ascertain, of which he gave me the following account:—One day that he called at the shop of Mr. Cooke, a bird-stuffer and Museum-keeper in Derby, in the summer of the year 1850, he was shown the skin of a bird which had lately been shot at the Siddals (the name of some common land, I believe, in the suburbs of Derby) with eleven Sand-Martins, with which this had been considered to make a twelfth; in skinning them, Mr. Cooke had remarked that it was not like the others, and he thought it a variety, but asked Mr. John Evans his opinion of it. That gentleman did not know what it was, but he bought the skin for one shilling, and has had it in his possession from that time till he gave it to me some months ago, as I mentioned before. Mr. Cooke is since dead. The circumstance of his having skinned the birds himself, makes it appear improbable that he should have made a mistake, and Mr. Evans assures me that he does not think there were any foreign skins about. I should add, that I believe there is no possibility of error since the skin came into Mr. Evans's possession."

Brewer, in his 'North-American Oology,' has given the following account of the species:—

"In the habits of different individuals of this species we find presented, in remark-

able contrast, a strict adherence to its primitive breeding-peculiarities in certain localities, and a complete departure from them in others. In the more thinly-settled portions of this country, especially where old forests with their many hollow trees and decayed stumps are still abundant, we find this Swallow breeding in their convenient cavities, and seldom induced, even when the effort is made to tempt them to do so, to occupy the boxes put up for their better accommodation. This was the case in the cluster of small islands in the Bay of Fundy around Grand Menan, where these birds are very abundant, and where, although Martin-boxes have been prepared for their use, in no instance had they, when I last visited that locality (1851), been induced to occupy them. Hollow trees, holes in stumps, fences, and logs seemed to be their preferred places for nesting. They are in consequence known in such localities by the name of the Wood-Swallow, so also, in the western part of the country, hollow trees are so generally their resort, that even Audubon, at the time of the publication of the first volume of his Ornithological Biography, was not aware that they had, in any instance, been known to imitate the Blue-bird, the Martin, and the Wren, in accepting the hospitalities of man. Yet this fact has not escaped the observation of Wilson. In some parts of the country, especially in Eastern Massachusetts, these Swallows have undergone a change of habit as complete as that of the Purple Martin, of whose boxes they have there possessed themselves. I have even known of their nesting in a rough candle-box with one end knocked out, and placed for them in an accessible situation. Audubon speaks of their driving the Barn-Swallow from its nest and taking possession, and Nuttall mentions their breeding on flat horizontal branches of trees. I have never met with them in either of these situations. This species is widely distributed, from the Middle States to the extreme northern regions; Sir John Richardson found them breeding in hollow trees at Fort Norman, on the Mackenzie River, in latitude 65°. They are spoken of by writers as not so numerous as the Barn-Swallow; but this my own observations would lead me to doubt. Along the Atlantic coast, from latitude 38° to the St. Lawrence, they are our most common species. They are said to be equally abundant on the shores of the Pacific and the banks of the Columbia River. They seem to be less abundant in the interior, especially in the absence of water.

"If, as we presume to be the case, the species of the Pacific coast is identical with this, the White-bellied Swallow has a range coextensive with the habitable portions of North America, from the West India Islands to Greenland on the Atlantic, and from Southern California to the Russian possessions on the Western Coast. Dr. Townsend observed it throughout Oregon; Dr. Gambel, Dr. Heerman, and Mr. Samuels met with it breeding it California; Lembeye and Gundlach give it as one of the common birds of Cuba (though not mentioned by Mr. Gosse as found in Jamaica); and Dr. Woodhouse found it throughout the Indian Territories, Texas, and New Mexico, as well as in California.

"This species, during the breeding-season, is more quarrelsome than any other of their relatives, and they are quite a match even for the Purple Martin, upon whose territories

they often intrude and keep possession. They evince a strong attachment for their offspring, and manifest great affliction when robbed of them, uttering low but exceedingly plaintive complaints. When a pair of these Swallows have become familiarized to a certain locality, returning to it year after year, with a little pains it is not difficult to enter into a limited intercourse with them, especially in supplying them with the materials of their nest. Two of these birds, who have for several years occupied an old and rudely-constructed tenement in the very heart of Boston, receive each year an abundant supply of feathers, almost from the very hands of the members of the family under whose protection they find a shelter. Nearly all the materials they used were feathers blown to them from the window, which, with the quickness of thought, they would dart at and catch with their bills, and immediately convey to their retreat. In time they became so familiar, as almost to take them from the hands of the person who supplied them. This has been repeated several seasons. When they have young just hatched, or eggs on the point of hatching, they sit so close as to be easily taken on their nest. When taken and released, they fly but a few feet from their nest, hovering over the heads of their intruders.

"They construct a very loose, soft, warm nest of fine hay and leaves, abundantly supplied with down and feathers, by which the eggs are often found completely covered. Great pains are apparently taken to keep the nest clean and dry by constant additions of soft, dry materials during incubation. They have usually two broods in a season.

"The eggs are of a beautiful pure white. When unblown, they have a delicate pinkish shade, imparted by the yolk. They are somewhat oblong in shape, the smaller ends are well defined and pointed, and the eggs are only subject to occasional variations in size. Their measurements vary from $\frac{12}{16}$ to $\frac{14}{16}$ of an inch in length, and from $\frac{8}{16}$ to $\frac{9}{16}$ in breadth."

The White-bellied Swallow does not appear to have much song. Mr. Bicknell, in his notes on the singing of birds, says:—"The song of this Swallow is hardly more than a chatter. It is to be heard as late in the year as the bird is with us. Its ordinary notes are less sharp and rapid than those of the Barn-Swallow."

Mr. Drew writes:—"I have seen no account of the song of this species, nor, indeed, was I aware of its musical powers until the past summer. May 24th, at an elevation of 8000 feet, I found a little colony just beginning house-keeping in a cotton-wood grove on an island in the San Antonio River, Colorado. When at rest they uttered a peculiar chiruppy warble, resembling a Sparrow's song in some respects, and strikingly like a Robin's in some of the half whistles."

We have already alluded to the habit of assembling in vast numbers which this Swallow occasionally exhibits. A further instance of this characteristic in its winter-quarters in Guatemala is related by Messrs. Salvin and Godman:—"We once observed a flock of this kind in the open space in the forest of the Volcan de Fuego called Pajal Grande, the elevation of which is about 5000 feet above the sea-level. This was on the 25th December, 1873, when a vast flock of these birds were seen circling round and

round in a compact mass, and every now and then settling on some low shrubs, weighing down the outer boughs and crowding together like a swarm of bees. We could detect no object in this assemblage; it was neither the season of migration, nor was it the roosting-time, as it took place in the afternoon of a bright sunny day."

Dr. Elliott Coues has published an interesting account of the habits of the species, from which we make the following extract:—

"Swallows are not seldom seen at sea, being among the birds that most frequently alight on the rigging of vessels, beyond sight of land, to rest and recruit before pushing on their trackless way. The pretty White-bellied Swallow, in dress-suit of snowy vest and literal 'swallow-tail'—for have we not such a name for a particular garment?—has been known to accomplish a trans-Atlantic voyage successfully, and reach the shores of the old country only to be captured and made a paragraph of. This shows what he can do when he really tries to fly; his movements over the land are the veriest sauntering in comparison. The White-belly seems, from another circumstance, to be one of the hardiest of our Swallows; for it is conspicuous among the winter birds of Florida, and doubtless other parts of the Gulf coast. Mr. Boardman tells me, *vivâ voce*, that countless thousands enjoy the serenity of the Floridan winters; and, like the Bluebird, the White-belly is not seldom tempted by the treachery of the 'January thaw' to come unguardedly northward, being the species which, perhaps oftener than any other of the family, is noted as occurring unexpectedly beyond its usual range in winter, and thus by no means making a summer. A case of this sort came within my experience at Fort Macon, North Carolina, where numbers of these Swallows appeared one warm day in early January, though there had been a smart freeze just before. The flock played about the fort, but were soon driven off by bad weather; they were next seen again on the 20th of the month, and occasionally from that time until the regular migration. From their winter-homes, not only in the Gulf States and in Southern California, but in Mexico, the West Indies, and Central America, these birds spread northward in March and April, from one side of the continent to the other, and some proceed to the Arctic regions. They breed independently of latitude, some on the highlands of Mexico, and anywhere in the West; but in the East, their usual breeding-range is said to be north of the parallel of 38°. How unexceptionally this may hold I do not know; but these Swallows are especially recognized as summer visitors in northerly parts of the United States, as New England, for example, and in the British Provinces.

"Unlike the Barn and Eave Swallows, the glossy *T. viridis* of Wilson is a confirmed hole-breeder, rather jealous of the ancient customs of its family, and slow to yield to the allurements of civilization, even though the most tempting boxes be presented to its choice. When it will, it will, and when it won't, the Purple Martins must be depended on to fill the neat little houses that we build to entice the Swallows. In Eastern Massachusetts, says Dr. Brewer, the change of habit is confirmed. In parts of Maine and New Brunswick, Mr. Boardman tells me, the experiment is far from successful, as, ten to one, Swallows still nest in holes in trees and stumps. The hollow tree is the

natural and still the usual resort, as we see clearly from study of these birds in the West.

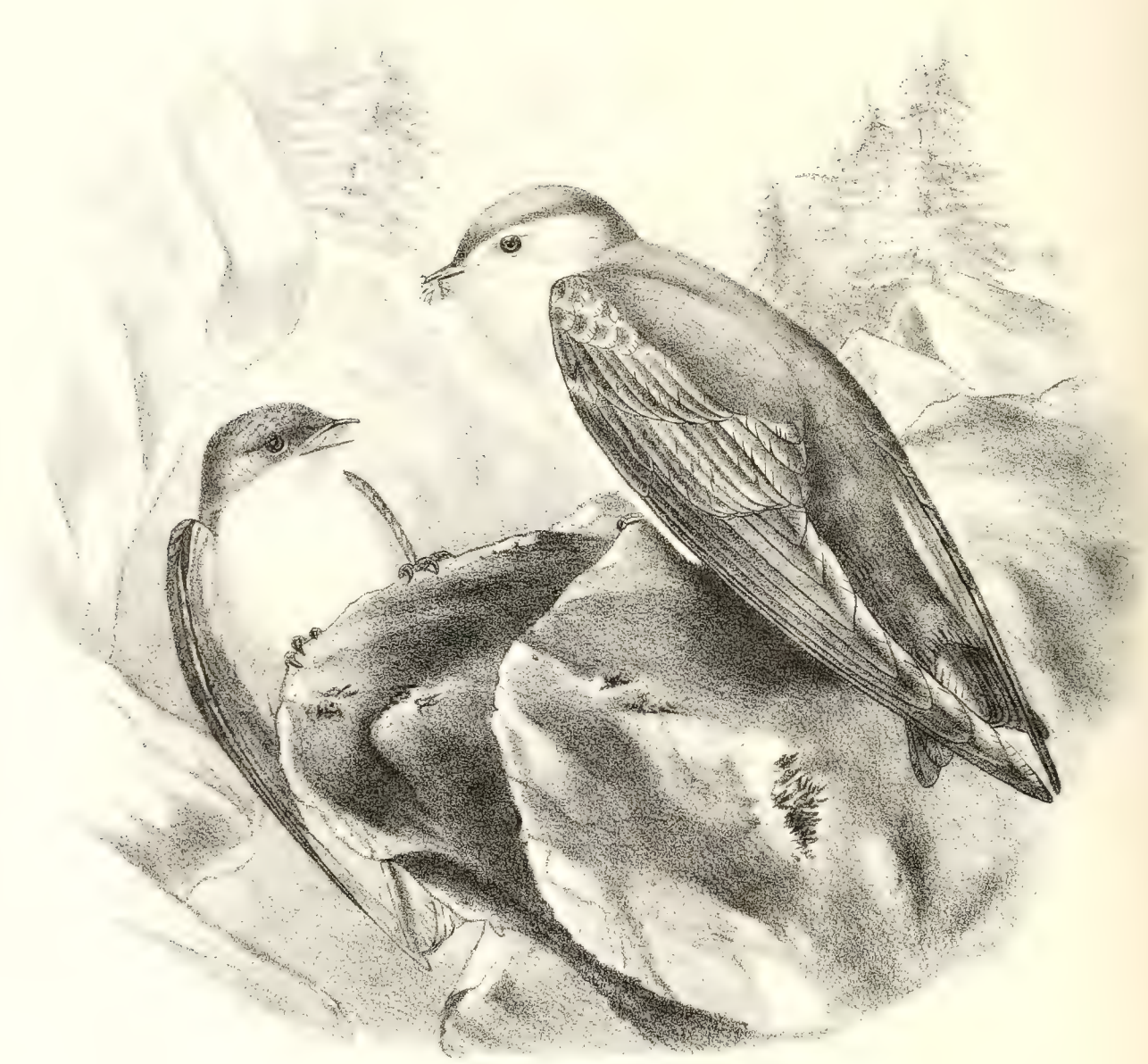
"I do not think that I ever saw *T. bicolor* in Arizona, where *T. thalassinus* is not uncommon. Others, however, have found it in that Territory. Captain Bendire speaks of its breeding about Tucson. In Southern Colorado, Mr. Henshaw found it 'not uncommon, though perhaps the rarest of the Swallows.' It is rarer in the Missouri region than the other Swallows are, because most of that country, like the rest of the Great Plateau, does not furnish many good breeding-places. In California, Cooper found the Blue-greens on the summit of the Coast Range, replacing the Barn and Cliff Swallows, and saw what he supposed were these birds flying over the Sierra Nevada at an elevation of 9000 feet. He speaks of their wintering in some parts of the State, and this is confirmed by the observations of Mr. Hepburn, who states that a few reside during the winter, being reinforced towards the close of February and growing abundant by the end of March. They are a month later still in British Colombia. I found them breeding at Pembina early in June, with great numbers of Cliff Swallows.

"I find no record of the nesting of this species in caves or holes in rocks, though *T. thalassinus* sometimes does so. Agreeably to its choice of nesting-site, which renders plastering needless, it uses no mud in building its nest, the fabric being loosely constructed of fine soft hay, with a copious warm lining of feathers. The latter are often so disposed as to curl prettily over the treasure within, like the Acanthus that suggested the Corinthian capital; and the eggs are sometimes almost entirely thus covered.

"There are some points in the earlier history of this Swallow that I wish to rehearse here. I may premise, that though the species was named by Wilson *viridis*, it had before been called *bicolor* by Vieillot; but that this even is not the root of the matter; for it was known to Latham and Gmelin as a variety of the European House Martin, *Chelidon urbica* of Boie and late naturalists. Next, this species is said to depart from the insectivorous customs of its family so far as to feed at times principally on the berries of the myrtle (*Myrica cerifera*). The fact is attested by Wilson, and Audubon speaks of *T. bicolor* as roosting by night on the *cirier*, as the French Louisianians call this plant. Thirdly, in connection with the well-known fact that these Swallows spend the winter in great numbers in Florida and the Gulf States, some items respecting their enormous congregations have been noted. I have already spoken of the vast assemblages of Swallows of various kinds which may be witnessed during the season of migration; the books are full of instances, and it seems that the present species is no whit behind its better-known congeners in this respect. Wilson saw hundreds of White-bellies on the sandy beach of the Great Egg Harbor. They 'completely covered' the myrtle-bushes of the low islands thereabouts; a man told him he had seen a hundred and two killed at a shot, and we need not presume that a person would prevaricate, just for two Swallows. In recording his observations made on these birds in Louisiana, in winter, Audubon speaks of 'thousands flying in different flocks,' but only mentions fourteen killed at a shot. During the winter, he says, many were sheltered in holes about the

houses, but the greater number resorted to the lakes, to spend the night among the myrtles. 'About sunset,' he continues, 'they began to flock together, calling to each other for that purpose, and in a short time presented the appearance of clouds moving towards the lakes, or the mouth of the Mississippi, as the weather and wind suited. Their aërial evolutions before they alight are truly beautiful. They appear at first as if reconnoitring the place; when, suddenly throwing themselves into a vortex of apparent confusion, they descend spirally with astonishing quickness, and very much resemble a *trombe* or water-spout. When within a few feet of the *ciriers*, they disperse in all directions, and settle in a few moments. Their twitterings, and the motion of their wings, are, however, heard during the whole night . . . . . The hunters who resort to these places destroy great numbers of them, by knocking them down with light paddles, used in propelling their canoes.' In another place, Audubon prints a note from Bachman, who states that on the 16th of October, 1833, in company with Dr. Wilson and Mr. J. W. Audubon, he 'saw such an immense quantity of this species of bird that the air was positively darkened. As far as the eye could reach, there were Swallows crowded thickly together, and winging their way southward; there must have been many millions!' "

The Plate represents the old birds in summer and winter plumage, along with a young individual. In the map the red colour exhibits the regular breeding-range, as determined for us by Dr. Coues and Mr. Allen, and the yellow colour the migration and winter range of the species; the dotted space is also included by Mr. Allen in the breeding-area of the species. We return our best thanks to both the above-named gentlemen for the help they have rendered us in elucidating this difficult subject.



Mintern Bros. imp.

TACHYCINETA THALASSINUS.

TACHYCINETA THALASSINUS (*Swains.*).

VIOLET-AND-GREEN SWALLOW.

Hirundo thalassina, Swains. Phil. Mag. new ser. i. p. 366 (1827); Audub. B. Amer. pl. 385; id. Orn. Biogr. iv. p. 597 (1838); Bp. Comp. List B. Eur. & N. Amer. p. 9 (1838); Audub. B. Amer. i. p. 186, pl. 49 (1840); Gray, Gen. B. i. p. 58 (1845); Denny, P. Z. S. 1847, p. 38; Cass. Ill. B. Calif. p. 245 (1856); Brewer, N. Amer. Ool. i. p. 102 (1857); Baird, Cass., & Lawr. B. N. Amer. p. 311 (1860); Baird, Review Amer. B. p. 299 (1865); Brewer, Amer. Nat. i. p. 122 (1867); Brown, Ibis, 1868, p. 421; Gray, Hand-l. B. i. p. 71, no. 841 (1869); Cooper, B. Calif. p. 107 (1870); Scl. & Salv. Nomencl. Av. Neotr. p. 14 (1873); Baird, Brewer, & Ridgw. Hist. N. Amer. B. p. 347, pl. 16. fig. 11 (1874).

Cecropis thalassinus, Less. Compl. Buff. viii. p. 499 (1837).

Chelidon thalassina, Boie, Isis, 1844, p. 171.

Herse thalassina, Bp. Consp. i. p. 341; Coues, Ibis, 1865, pp. 159, 163.

Tachycineta thalassina, Cab. Mus. Hein. Th. i. p. 48 (1850); Sumichr. Mem. Bost. Soc. N. H. i. p. 547 (1869); Coues, Key N. Amer. B. p. 113 (1872); id. B. N.-West, p. 86 (1874); Ridgw. Rep. Surv. 40th Par. iv. p. 443 (1877); Coues, B. Color. Vall. p. 419 (1878); Belding, Proc. U. S. Nat. Mus. i. p. 409 (1879); Scott, Bull. Nutt. Orn. Club, iv. p. 93 (1879); Minot, op. cit. v. p. 228; Ridgw. Proc. U. S. Nat. Mus. iii. p. 175 (1880); Drew, Bull. Nutt. Orn. Club, vi. p. 85 (1881); Coues, Check-list N. Amer. B. p. 42 (1882); Allen & Brewster, Bull. Nutt. Orn. Club, viii. p. 160 (1883); Belding, Proc. U. S. Nat. Mus. v. p. 557 (1883); Coues, Check-list N. Amer. B. 2nd ed. p. 323 (1884); Drew, Auk, ii. p. 15 (1885); Beckham, t. c. p. 141; Agersb. t. c. p. 354; Hensh. t. c. p. 333; Scott, t. c. p. 354; Anthony, Auk, iii. p. 170 (1886); Everm. t. c. p. 183; A. O. U. Check-list N. Amer. B. p. 293 (1886); Lloyd, Auk, iv. p. 294 (1887); Townsend, Proc. U. S. Nat. Mus. x. p. 222 (1887); Scott, Auk, v. p. 31 (1888); Merrill, t. c. p. 360; Jefferies, Auk, vi. p. 222 (1889); Mearns, Auk, vii. p. 260 (1890); Chapman, Bull. Amer. Mus. Nat. Hist. iii. p. 149 (1890).

Petrochelidon thalassina, Cass. Cat. Hirund. Philad. Mus. p. 5 (1853); Scl. & Salv. Ibis, 1859, p. 13; iid. P. Z. S. 1864, p. 173.

Tachycineta thalassinus, Salv. & Godm. Biol. Centr.-Amer., Aves, i. p. 232 (1883); Sharpe, Cat. Birds in Brit. Mus. x. p. 119 (1885).

T. uropygio minimè albo: dorsi postici et uropygii lateribus albis: caudâ ferè quadratâ: supracaudalibus purpurascentibus: dorso toto æneo vel purpurascenti-viridi: maculâ postoculari albâ.

Hab. in provinciis occidentalibus et centralibus Americæ septentrionalis, in Americâ centrali hibernans.

Adult male. General colour above dark green with a slight bronzy shade, becoming rather more bluish green on the rump and mixed with purple on the upper tail-coverts; on each side of the rump a white patch; scapulars green like the back; wing-coverts black, the lesser and median series tipped with bluish green; greater coverts, bastard-wing, primary-coverts, and quills black, externally glossed with deep indigo; tail-feathers also black with a bluish gloss; crown of head bronzy green; occiput and nape purple, with a concealed narrow collar of ashy round the hind neck, caused simply by the grey bases of the feathers; lores dusky; feathers over the eye extending down behind the latter, ear-coverts, cheeks, sides of face, and entire under surface of body silky white; under wing-coverts and axillaries smoky brown with whitish edgings, the coverts near the edge of the wing and the lower greater coverts darker; quills dusky brown below, rather more ashy on their inner edge: "bill black; feet brownish black; iris brown; mouth pale yellow" (*Coues*). Total length 4·5 inches, culmen 0·3, wing 4·3, tail 1·65, tarsus 0·45.

Adult female. Not so brilliant in colour as the male, and distinguished by the browner colour of the sides of the face and ear-coverts, the throat having a slight wash of ashy brown; the head is also decidedly browner with a bronzy-green shade, but never so brilliant as in the adult male. Total length 4·3 inches, culmen 0·3, wing 4·25, tail 0·6, tarsus 0·4.

Adult male in winter plumage (Dueñas; O. Salvin). Differs from the breeding-plumage in being entirely bronzy or oil-brown washed with purple. This purple shade is much more strongly pronounced than in summer, and the remains of it are noticeable in the description of the breeding-dress, where the purple occiput and hind neck are alluded to as contrasting with the crown. The green and purple shades on the rump and upper tail-coverts are the same in both seasons, and the under surface and facial markings do not differ.

Young male (Santa Fé Mountains, N.W. Mexico, Aug. 4; H. W. Henshaw). Brown, the entire back with a purplish or greenish gloss (according to the light), which is lacking on the head, lower back, and rump; on either side of the lower back a white patch; wings and tail brown, with a faint gloss of steel-green on the former, the inner secondaries edged with ashy at the ends; sides of face brown, as in the adult female, with a very faint indication of the white above the ear-coverts; cheeks, throat, and under surface of body silky white, with a brownish shade across the fore neck; gape yellowish.

The series in the Henshaw collection shows that in the winter the adult birds are distinguished by broad white tips to the inner secondaries, and the violet colour of the rump is very dull and almost obliterated by greenish blue. By April the white edgings to the inner secondaries have become entirely abraded. There is considerable difference in the colour of the back, some specimens being of a beautiful deep green, whilst others are more oily green; and in the 'Catalogue of Birds' it was suggested that this might be due to the wearing of the feathers during the breeding-season. An examination of the Henshaw series, however, induces us to modify this opinion, for we find a bird from Pueblo, in Colorado, shot on the 27th of July, which is bright green on the back, and equals in brilliancy any of the specimens procured in the earlier spring. These more brightly-coloured individuals may therefore be older birds, and the dull-coloured ones be the birds of the previous year.

Hab. Middle and Western Provinces of the U. States, north to British Columbia and Vancouver Island, east to S.E. Dakota and Western Texas, south in winter to Lower California, and to Guatemala in Central America.

This is one of the most beautiful of all the Swallows, and is an inhabitant of the Western United States, as well as some of the Central Provinces. Professor Elliott Coues, in his 'Birds of the Colorado Valley,' has given a most excellent account of the species, which has been made the foundation of our present article. We have also studied the notes of Messrs. Baird, Brewer, and Ridgway in their 'History of North-American Birds,' and those of Messrs. Salvin and Godman in the 'Biologia.' Since these gentlemen wrote, however, many further observations of interest have been recorded in the 'Auk' and other journals, the details of which are given below. The northern-most point in its western distribution to which the Violet-and-Green Swallow extends its range seems to be Vancouver Island, whence we have seen specimens collected by Mr. A. Forrer. Dr. Robert Brown states that it breeds there, building in knot-holes of trees. The late Mr. J. K. Lord, during the Boundary Commission on the 49th Parallel, noticed this species at Colville, to the west of the Rocky Mountains. He numbers the species among the earliest visitors, arriving in March in small flocks, increasing in numbers in May, and building in June in holes of trees. Mr. Clark P. Streator also found it breeding at Ashcroft, in British Columbia. He writes:—"Ashcroft is located one hundred miles north of the United States Boundary, and two hundred miles east of the western terminus of the Canadian Pacific Railway. This place is almost a desert: only sage-brush, small cactus, and now and then a few stunted trees and plants are to be seen. But the mountains, two thousand feet high, are covered with scattering pine-forest."

Drs. Suckley and Cooper state that in Washington Territory it arrives early in May in Puget Sound. Both in the interior of Oregon and of Washington Territory the bird was found to be quite abundant, frequenting entirely the high prairies, bordered with oak and deciduous trees, and breeding in knot-holes or in the deserted holes of Woodpeckers. Professor Coues states that he observed a few individuals on the 26th of June, 1874, on the Upper Missouri, above the mouth of the Yellowstone, near the Quaking-Ash River. The species was also collected by Dr. Hayden in the Wind River Mountains, in Wyoming. Dr. Mearns also states that he has found the species breeding in the mineral formation about the hot springs and geysers of the Yellowstone National Park and in the bluff banks of the Big Horn River in Montana. Mr. Agersborg records it as probably accidental in South-eastern Dakota, but breeding there.

Many good notices of the range of the species throughout Colorado have been published. Mr. Drew states that the upper limit of its range in spring is 7000 feet, in summer 11,000 feet, and in autumn 9500; it breeds from 5000 to 10,500 feet. The same observer states that he found it "very abundant in San Juan County." Mr. Minot speaks of it as a common summer resident of local abundance, ranging up to the timber

line. Mr. Scott, as stated in his paper on the ornithology of the Twin Lakes, found it abundant in localities, but not generally distributed. Mr. Beckham also states that he observed the species but once at Pueblo, when a dozen or more were seen on the 10th of June. In their paper on the birds of Colorado, Messrs. Allen and Brewster remark:—

"First seen May 4th. A considerable number observed on the 14th, and at frequent intervals later. In July and August large numbers were seen near West Monument Creek, where they outnumbered all the other Swallows."

In Utah, as in Arizona and New Mexico, Mr. Henshaw states that this Swallow inhabits the higher regions, being abundant in all suitable localities, and preferring the open spaces or edges of the pinaries and groves of oaks, where it breeds in old Woodpecker-holes.

Mr. Ridgway has recorded the species as abundant on the main island in Pyramid Lake, Nevada, in the month of May, and in July he saw it again among the limestone walls of the eastern cañons of the Ruby Mountains, where it was also nesting.

Mr. Anthony, in his paper on the birds of Washington County, Oregon, says that it is "a very common migrant, a few remaining to breed, nesting in colonies in hollow stubs." Dr. Merrill did not observe it himself at Fort Klamath, but says that it must occur there; he found it, however, very common at the outlet of Diamond Lake early in August.

The observations on the species in California have been numerous and varied. The following note is given by Messrs. Baird, Brewer, and Ridgway, from the writings of Dr. Hepburn, a very well-known observer:—"This Swallow has quite an extensive range along the Pacific coast, but it is restricted as to the localities it inhabits. At the Pulgas Ranche, near San Francisco, it is even more common than *T. bicolor*, while a few miles from thence not one is to be seen. He has also seen it on the bank of the Fresno, near its junction with the San Joaquin River, and again in the Yosemite Valley, without meeting with a single specimen in the intervening country. About Victoria this was the prevailing species. These Swallows, as far as Mr. Hepburn observed, always build in holes of trees. Their nest, he states, is formed of a few fine dry stems of grass, placed at the bottom of the hole, covered over with a thick mass of feathers. These birds have two broods in a season. In 1864 he noted their arrival in San Mateo County on the 28th of March." Dr. Cooper says:—"I have not observed this species west of the Coast Range, except when emigrating. They appeared at Santa Cruz in 1866, on March 19th, and a large flock, with a few *Chætura*, stopped for a few hours on their way southward, October 5th, which dates are probably about the usual ones for their migrations."

Mr. Charles Townsend, in his account of the birds of Northern California, says that "the Violet-green Swallow was often seen flying over the almost inaccessible limestone rocks which crowned the high ridge opposite the United States Fishery." Here he procured his first and only specimen on July 4, 1883.

Mr. L. Belding, in his paper on the Birds of Central California, says that it was first

recognized on the 7th of August at Dunbar's Mill, when at least a hundred were in sight. Three days afterwards it was seen flying over the meadows at Big Trees, and thereafter nearly every day till August 27. They chose as a resting-place the top branches of a tall dead pine near the hotel, out of shooting-range; and often, when flying, were so high as to be seen with difficulty; occasionally, however, they mingled with Barn-Swallows near the ground.

Mr. Evermann states that the species is rather common in Ventura County during the spring migration, and a few remain to breed. Mr. Belding often saw the species in winter in the extreme south of Lower California.

In Arizona Professor Elliott Coues found the Violet-and-Green Swallow nesting near Fort Whipple. Mr. Scott, in his paper on the birds observed by him in spring in Southern Arizona, says that it was "not uncommon in small flocks at the very highest altitude and in the heaviest pine-timber. They frequently alighted on the upper limbs of dead trees, and doubtless breed here in the deserted Woodpecker holes." Later he writes:—"In the Catalinas this is the commonest of the Swallows, but, curiously, at the lower altitudes (4000 feet) in the spring it is rare or does not occur. In the spring of 1885, I found it common in late April on the summit of the mountains in the pine-woods, but though I had looked for it carefully all the preceding six weeks at the altitude of my house I only saw a single individual, on March 14th. In the late summer and fall, from August 15th till October 7th, it was common in the region near my house. It probably breeds in the pines of the Catalinas in numbers."

Dr. Mearns has recently published the following note:—"This exquisite bird is highly characteristic of the wooded mountain regions of Arizona, where it breeds, not only in the hollows of trees, but very frequently in cavities in cliffs. While for the most part retiring to the higher land during the breeding-season, a good many pass the summer and breed in the wooded cañons in which there are streams, in the lower country. None were found breeding in the immediate valley of the Verde, in the vicinity of Fort Verde, but they were sure to be found after ascending, for a short distance, any of the tributary streams that flow through cañons from the high plateau. There they usually nest on the limestone cliffs which form the walls of the cañons."

In New Mexico Professor Coues found the species abundant on the Raton Mountains, and Mr. Henshaw writes:—"This, the only Swallow spending the summer in New Mexico, or in fact occurring at all, was extremely numerous all through the pine-woods, where it finds every convenience for nesting in the multitude of perforated stubs. After the young were on the wing, the birds left the pine-woods and resorted to the tops of the ridges and the open valleys, where, high in mid-air, they were seen busily hunting for insects. On September 8th they were still to be noticed, though the majority had departed some time before. A few days later and the last had disappeared."

Mr. W. Lloyd, in his paper on the birds of Western Texas, states that it was seen as a fall migrant in Concho County, being observed and taken on the 1st of September, and seen again on the 1st of October. It has not been recorded from Tom Green county.

In Mexico this beautiful Swallow has been obtained by Mr. Lloyd at Tetuaca in Chihuahua in March. Dr. Couch met with the species also at Saltillo in the State of Coahuila, and Mr. W. B. Richardson has procured specimens in Jalisco, in the Sierra de Bolaños, in July, at 3500 feet; these specimens, now in the Salvin-Godman collection, are in worn plumage and were apparently breeding.

The species appears to be not rare in the Valley of Mexico, for numerous examples were procured by M. Ferrari-Perez between the months of January and July. The following are the localities as evidenced by the series in the Salvin-Godman collection:—Tetelco (Xochimilco), Jan. 18; Coapa (Tlalpam), Feb. 29, March 6; Mexicalcingo (Tlalpam), Feb. 6; Axotla (Tacubaya), March 4; Huipulco (Tlalpam), April 23; Atotonilco (Huejotzingo), April 15, July 15; Chimalpa (Tacubaya), May 4. The specimen obtained at Huipulco on the 23rd of April looks as if it had somewhat abraded plumage, as if nesting; and the bird procured at Atotonilco in July is in full moult, and has already put on some of the winter secondaries with white edges. M. Dugès gives the Hacienda de Tapatero as a locality.

The late Mr. Sumichrast found that in the State of Vera Cruz the species was resident, being seen not only in the hot belt of the coast, but also in the temperate region and throughout the plateau at almost all heights, being everywhere very common. Messrs. Baird, Brewer, and Ridgway state that the species breeds on the plateau of Vera Cruz; but, as Messrs. Salvin and Godman have pointed out in the 'Biologia,' there is nothing in Sumichrast's published papers to confirm this assertion, though it is most probable that the Violet-and-Green Swallow really does breed there, as it is included by Sumichrast in his list of the resident birds of the State. In Orizaba it has been collected by Le Strange and by Sumichrast. Mr. Godman procured specimens at Pinal and Amecameca in the State of Puebla in April, and his collector, Manuel Trujillo, has also met with the species in Oaxaca, viz. at Villa Alta in March, and at Totontepec in February. Messrs. Salvin and Godman remark:—"In Guatemala we only observed it in the winter months, from November till March. It was then common about the open lands near Dueñas and about the plains of San Gerónimo, at an elevation of about 3000 feet. It has also been obtained by Mr. Sarg at Coban."

The best summary of the facts connected with the breeding of the Violet-and-Green Swallow is given by Professor Elliott Coues in his 'Birds of the Colorado Valley,' from which work we make the extracts given below. The earliest accounts of the breeding of the species are those of Townsend and Nuttall, the former stating that it built a "nest of mud and hay on clay bluffs," and that it also nested in hollow trees. "The latter statement," says Professor Coues, "is correct; in making the former, Townsend seems to have got the species mixed with the Cliff-Swallow. Nuttall says that they appeared to occupy nests of the Cliff-Swallow, instead of building for themselves, and supposes them to sometimes breed in trees. Audubon supplied Dr. Brewer with a drawing of an egg of this species, got by Nuttall in Oregon, which Dr. Brewer says was the first knowledge he acquired of the 'markings' of the egg. The error about the egg and nidification

flourished beyond 1857, when Dr. Brewer elaborated it with care, describing and figuring the speckled egg of the Cliff or Barn Swallow as that of the Violet-green, and discrediting Nuttall's observation respecting the probable nesting of the species in trees. The fact is, that the Violet-green Swallow nests in holes in trees and elsewhere, and lays a pure white egg, exactly like *T. bicolor*."

Professor Coues proceeds:—

"I am uncertain to whom we owe the discovery of the fact that the eggs of the Violet-green Swallow are white and unmarked. The information was long delayed in coming, partly owing, no doubt, to the difficulty of getting at the eggs, even when the artfully hidden retreat is discovered. The nest may be in honey-combed rocks, entirely out of reach; or in the top of a blasted tree, too rotten to be scaled with safety; or out of reach in a knot-hole in strong sound wood. After they were found out, and the hole-breeding character of the species was established, it was natural that the subsequent accounts of the cliff and rock nests should be received with caution or mistrust; and so much has been said one way and another, that it will tend to put the history of the species in the best light to review the testimony on the subject.

"When in New Mexico, in 1864, I found the Violet-green Swallows to be very common in the Raton Mountains. This was in June, and I have no doubt that the birds were then nesting, though I had no chance of observing them closely. I noticed their close resemblance to White-bellied Swallows in general appearance, and particularly in mode of flight; and I observed then, as subsequently, the curiously misleading circumstance that the birds appeared to have white rumps. In fact, as is well known, the rump is like the rest of the upper parts in colour, but the fluffy white feathers of the flanks lie over the part during flight, sometimes meeting over the root of the tail, thus causing the appearance observed. This appearance of tricoloration—violet, green, and white—is striking. The following year, at Fort Whipple, in Arizona, I made quite a study of these birds, whose exquisite beauty could hardly fail to touch even the most insensible observer. They nestled in considerable numbers in the pine-woods about the fort, usually preferring the edges of the timber, and constructed their nests of hay and feathers in the natural crevices of trees, or in old Woodpecker holes. Sometimes isolated pairs occupied the deciduous trees in the vicinity, as the cotton-woods along the creek and the oaks of the open hillsides; but most of the birds gathered in little colonies in clumps of pine-trees. The birds reached this elevated locality the second or third week in March, and remained until late in September. I considered them the commonest of their tribe, quite characteristic, in fact, of the Arizona pine-belt."

Mr. Ridgway has given the following account of the species as observed by him in Nevada in May:—

"They were very abundant, and frequented chiefly the cliffs of calcareous tufa, where they were observed to enter the fissures of the rock to their nests within. In July we saw it again among the limestone walls of the eastern cañons of the Ruby Mountains, where it also nested in the crevices on the face of the cliffs, its associates being the

White-throated Swift (*Panyptila saxatilis*) and Cliff-Swallow (*Petrochelidon lunifrons*). Their nests were in almost every case out of reach, only two of those that were found being accessible. Both were in horizontal fissures, scarcely large enough to admit the hand, the nest consisting of a flattened mass of sticks and straws, lined with feathers, like those of the Bank-Swallows (*Cotile* and *Stelgidopteryx*); one of them contained five young birds, but the other had apparently been tampered with in some way, since the parent was dead and her three eggs broken. The latter, like those of *T. bicolor* and the two species above-mentioned, were pure white, without markings.

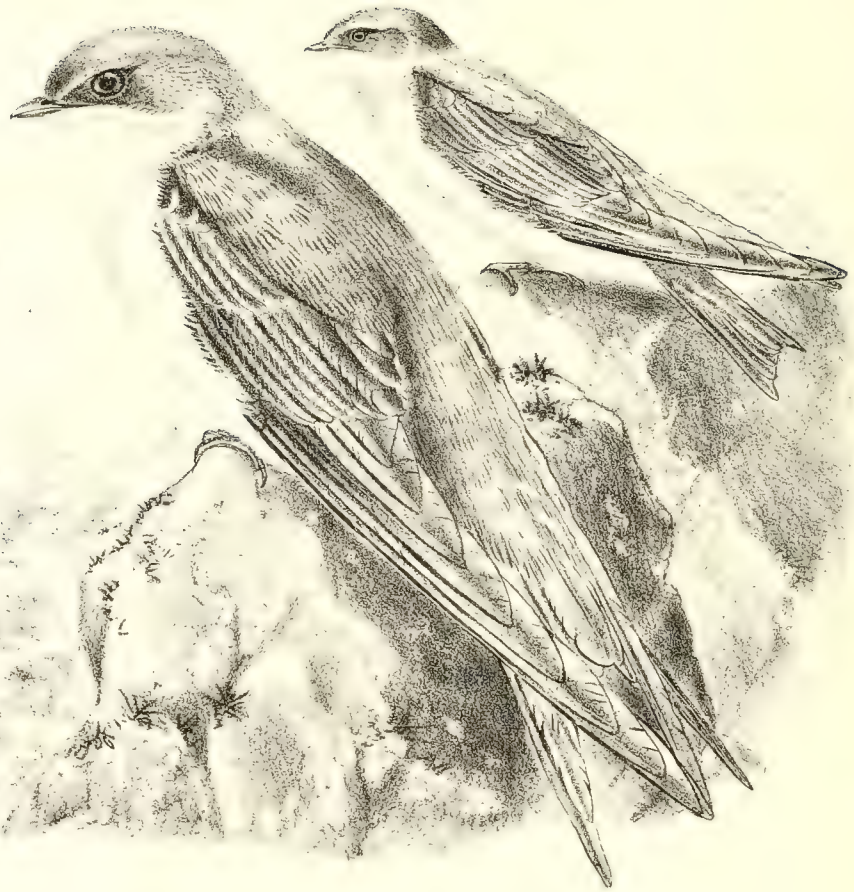
"Although other observers, whose statements we do not in the least doubt, have described the habits of this bird as arboreal, like those of the White-bellied Swallow (*T. bicolor*) and the Purple Martin, we never found it so in any locality during our trip, it being everywhere a strictly saxicoline species, and an associate of *Panyptila saxatilis*, *Petrochelidon lunifrons*, and *Hirundo horreorum* rather than of the species named, and to be found only where precipitous rocks, affording suitable fissures, occurred. When on the wing the appearance of this lovely Swallow is very striking, and so unlike that of any other that it may be immediately distinguished. No other species resembles it except the *T. bicolor*, which is somewhat similar on account of the pure white lower parts; but a more attentive examination discovers the greater amount of white on the side of the head, and if the bird is viewed from above the plumage is seen to be tricoloured—the rump rich intense violet, and the back lustrous green, the two colours being separated by a very conspicuous broad and apparently continuous band of snowy white across the upper part of the rump, caused by the close approximation of the two white flank-patches.

"This Swallow appeared to be a very silent species, but a few notes were heard, which called to mind the chirping of young Purple Martins, as heard in rainy weather."

"This is enough," adds Professor Coues, "to settle the question we asked each other for some years, Where *does* the Violet-green breed? We have here simply a *hole-breeder*, indifferent whether the cavity it occupies be tree or rock; and we need not be surprised to learn any day that it has been found nestling in a bank of earth, in a natural excavation, or even in a Kingfisher's or Bank or Rough-winged Swallow's hole. One thing, however: it has never learned the plasterer's trade, at which the Cliff and Barn Swallows are such clever artisans; and yet it has been stated by me, in the 'Birds of the Northwest,' p. 88, on the authority of Mr. T. M. Trippe, to have been found '*nesting under the eaves of houses*, like the Cliff-Swallow,' the fact being adduced to show that, like most others of its tribe, this bird had at length paid its compliments to human civilization. The details of the circumstance had not been communicated to me in 1874; but Mr. Trippe yesterday (March 17, 1878) visited my study, and we had some conversation on the subject. He described the nests, in which Violet-green Swallows certainly had their eggs, as bulky structures of mud, and like those of Cliff-Swallows. Being perfectly familiar with the birds, he could not have been mistaken in identifying the species; and he agreed with me that the birds

must have occupied in these instances the deserted nests of other Swallows. This brings up Nuttall's early testimony to the same effect, and makes it seem much more probable—if it may not indeed be regarded as confirmatory—though he or Townsend certainly got hold of the wrong egg, a drawing of which subsequently came into Dr. Brewer's possession through Audubon. We should expect the Violet-greens, on yielding to civilization, to come to terms in the same way the Martins and White-bellies have, by occupying boxes set up for their use, or else to enter knot-holes or the crevices behind weather-boards, as the Wrens; but that their habits will be modified in some way, and at no distant day, there is no reasonable doubt. With which understanding, I leave the wilful and capricious little creatures to enjoy their hermitages, whether of tree or rock, as long as they please."

The descriptions have been drawn up from the series in the British Museum, and the figures have been drawn by Mr. Wyatt from specimens in the Salvin-Godman collection.



C.W.W del

Mintern Bros. imp.

TACHYCINETA CYANEOVIRIDIS.

TACHYCINETA CYANEOVIRIDIS (*Bryant*).

BAHAMA SWALLOW.

Hirundo cyaneoviridis, Bryant, Proc. Bost. Soc. Nat. Hist. vii. p. 111 (1859); Baird, Review Amer. B. p. 303 (1865); Gray, Hand-l. B. i. p. 72, no. 850 (1869); Salvin, Ibis, 1874, p. 307; Cory, B. Bahama Isl. p. 79 (1880).

Callichelidon cyaneoviridis, Baird, Review Amer. B. p. 297 (1865); Cory, B. W. Indies, p. 73 (1889).

Hirundo (*Callichelidon*) *cyaneoviridis*, Baird, Brewer, & Ridgw. Hist. N. Amer. B. i. p. 327, note (1874).

Tachycineta cyaneoviridis, Sharpe, Cat. Birds in Brit. Mus. x. p. 121 (1885).

T. uropygio dorso concolore: subtùs albus: supracaudalibus chalybeis: dorso viridescente: caudâ valdè furcatâ: uropygii lateribus minimè albis: maculâ albâ supraoculari nullâ.

Hab. in insulis Bahamensibus.

Adult male. General colour above oil-green with a steel-blue gloss, the latter more pronounced on the lower rump and upper tail-coverts; wing-coverts blackish, externally steel-blue or bluish green, the least series greener and more like the back; bastard-wing, primary-coverts, and quills blackish, externally glossed with steel-blue, the secondaries rather brighter steel-blue, and green on their edges; tail much forked, the feathers black glossed with steel-blue; head and neck like the back, as also the sides of the crown and upper margin of the ear-coverts; lores blackish, as also the feathers immediately below the eye; cheeks, ear-coverts, and entire under surface of body white, including the under wing-coverts and axillaries, sides of upper breast like the back; quills dusky below; "bill and feet black" (*C. B. Cory*). Total length 5·9 inches, culmen 0·35, wing 4·6, tail 3, tarsus 0·45.

Differs from *T. thalassinus* in its strongly forked tail and larger size, in the absence of the white spot above the eye, and in the totally different colour of the upper parts, in which there is an absolute absence of any purplish shade.

Young. Brown above with a strong lustre of oily green, a little more pronounced on the back and wing-coverts; head and upper tail-coverts more sooty brown, as also the upper margin of the ear-coverts; cheeks, ear-coverts, and under surface of body white, with a patch of sooty brown on the sides of the upper breast. Total length 5·5 inches, culmen 0·4, wing 3·95, tail 2·2, tarsus 0·45.

Hab. Bahama Islands.

This Swallow has as yet not been met with away from the Bahamas. Its nearest ally is *T. thalassinus* of North America, but it differs from that species in its larger size and strongly forked tail, in the absence of the white spot above the eye, and in the totally

different colour of the upper parts, from which there is an absolute absence of any purplish shade.

The Bahama Swallow was first made known to science by the late Dr. Bryant, who gave the following note upon the species :—

"This Swallow, which I have been unable to find described, is one of the most beautiful species inhabiting North America. I saw them during the whole of my stay at Nassau, but only on the first mile of the road leading to the west end of the island. They were so abundant there that thirty or forty could be seen at almost all times. The flight was more like that of *H. horreorum* than *H. bicolor*. They generally followed the road up and down, seldom flying high, but skimming along near the ground. I did not succeed in finding their nests, and could not ascertain whether it bred on the island or not. I killed no specimen after the 28th of April; up to this date the genital organs exhibited no appearance of excitement. The stomachs of those dissected contained entirely small dipterous insects, some of them extremely minute."

Mr. C. B. Cory, in his 'Birds of the Bahama Islands,' writes :—

"The beautiful little Bahama Swallow seems to be restricted to the Bahama Islands. A few were seen on Andros Island in January, but they were flying high, and we were unable to shoot them. During the month of June they became very abundant in the neighbourhood of Nassau, and I was able to procure a fine series of specimens. In their habits they do not seem to differ from our common species (*T. bicolor*), except perhaps that they are not as quick in their movements. Their food seems to be entirely insectivorous."

Messrs. Baird, Brewer, and Ridgway believe that the species may probably occur on the coast of Florida.

Our descriptions are derived from two specimens in the Salvin-Godman collection, to which they were presented by Mr. Cory. The figure is taken from one of the same birds.

APPENDIX

TO THE

GENUS TACHYCINETA.

TACHYCINETA ALBIVENTRIS [*anteà*, p. 139].

Add:—

Tachycineta albiventris, Lawr. Proc. U. S. Nat. Mus. i. p. 450 (1878); Allen, Bull. Amer. Mus. Nat. Hist. ii. p. 79 (1889); Riker & Chapman, Auk, vii. p. 267 (1890).

Mr. Allen records a specimen collected near Reyes, in Bolivia, in June. It was obtained by Dr. Rusby, who says it is common about houses. Mr. Clarence Riker noticed this species as common about water near Santarem from June to August in 1887.

Mr. Lawrence has given a list of the birds of Guadeloupe by Dr. L'Herminier, and this Swallow is included, but no one has seen it from the island, and there is doubtless some error in the determination.

For the geographical distribution of this species, *vide infrà*, Plate 31 [Map].

TACHYCINETA LEUCORRHOUS [*anteà*, p. 143].

Add:—

Tachycineta leucorrhoa, Scl. & Huds. Argent. Orn. i. p. 30 (1888); Graham Kerr, Ibis, 1892, p. 124; Holland, t. c. p. 195.

A male was procured at Fortin Page during the Pilcomayo Expedition by Mr. Graham Kerr on the 2nd of September, 1890. Mr. A. H. Holland found it the latest arrival of all the Swallows at Estancia Espartilla, Buenos Ayres, and it was the earliest to depart. It breeds in disused holes of *Geocitta cunicularia*, making a nest of hay, lined with feathers at its inmost point. The eggs were six in number. It breeds at the end of October.

For the geographical distribution of this species, *vide infrà*, Plate 32 [Map].

TACHYCINETA ALBILINEA [*anteà*, p. 149].

Add:—

Tachycineta albilinea, Nutting, Proc. U. S. Nat. Mus. vi. p. 392 (1883).

Since writing our article on this species the following specimens have been received by Messrs. Salvin and Godman:—"Tampico, February to June (*W. B. Richardson*); Vega del Casadero, Vera Cruz, December (*M. Trujillo*); Rio Papagaio, 1200 feet, State of Guerrero, October (*Mrs. H. H. Smith*); Cayo, British Honduras (*F. Blancaneaux*)."

Mr. Nutting, in his notes on the birds of Nicaragua, observes:—"Abundant. Generally seen along the shore of the lake, sitting on the dead trees overhanging the water, whence it makes short excursions after insects much in the manner of Flycatchers."

For the geographical distribution of this species, *vide infrà*, Plate 32 [Map].

TACHYCINETA MEYENI [*anteà*, p. 153].

Add:—

Tachycineta meyeni, Allen, Bull. Amer. Mus. Nat. Hist. ii. p. 79 (1889); Scl. Ibis, 1891, p. 16; Holland, Ibis, 1892, p. 196.

Dr. Rusby procured this species at the Falls of the Madeira River, Bolivia, in October. He says it is more of a river Swallow than *T. albiventris*, frequenting the vicinity of streams.

Since writing our account of this species Mr. A. H. Holland has met with it at the Estancia Espartilla, near Ranchos, on the Southern Railway of Buenos Ayres. It is curious that the species was not met with by Mr. Hudson during his long residence near Buenos Ayres, and it is an interesting fact if the bird is a recent visitor to the neighbourhood. Mr. Holland writes:—"This Martin is the commonest of the family here, arriving late in July and departing in April, although many remain with us all the year round, retiring on the coldest nights to the long paja-grass, from which one rouses them as one rides along. In the daytime these birds hawk around travellers, catching the numberless insects roused by them. The nest is placed in Oven-birds' nests, holes in trees, spouts, and under eaves; it is composed of a little straw, thickly lined with numberless soft feathers. The eggs are six in number, white, and rather blunt. It breeds in the middle of October."

For the geographical distribution of this species, *vide infrà*, Plate 35 [Map].

TACHYCINETA BICOLOR [*anteà*, p. 155].

Add:—

Tachycineta bicolor, Belding, Occ. Papers Calif. Acad. Sci. ii. p. 189 (1890); Chapman, Bull. Amer. Mus. Nat. Hist. iii. p. 149 (1890); Palmer, Pr. U. S. Nat. Mus. xiii. p. 265 (1890); Thompson, t. c. p. 610; Scott, Auk, vii. p. 312 (1890); Eagle Clarke, t. c. p. 322; R. H. Lawrence, Auk, ix. p. 46 (1892); Dwight, t. c. p. 138; Coombs, t. c. p. 206; Scott, t. c. p. 213; Attwater, t. c. p. 340; Hatch, B. Minnesota, p. 354 (1892); Cory, Cat. West Ind. B. p. 115 (1892); C. Hart Merriam, N.-Amer. Faun. no. 7, p. 111 (1893); Allen, Bull. Amer. Mus. Nat. Hist. v. p. 40 (1893).

Mr. Eagle Clarke states that a specimen from Fort Churchill, Hudson's Bay, is in the Gillespie collection in the Edinburgh Museum.

Mr. William Palmer states that he saw this species on the Magdalen and Mingan Islands, though not abundantly.

Mr. Hatch gives an interesting note on the species in Minnesota, from which we make a few extracts:—"This bird loses no time in making its northern migrations as soon as there is to be found an appropriate supply of food. Quite early in April, when the sun has driven away the cheerless clouds enough to let his rays begin to warm the recently frozen earth a little, and clusters of tiny forms of insect life begin to occupy the air, the White-bellied Swallows, often accompanied by the Purple Martins, appear suddenly upon the scene, in limited numbers, as *avant-courriers* of the hosts to come when the question of food-supply has been assured. Sometimes, after a few hours spent here, as described, in connection with the Purple Martins, they leave as suddenly and as completely as they came, and are not seen for five, ten, or even fifteen days, if the season remains exceptionally backward; yet there have been years when, all of the conditions referred to being continuously unfavourable, they have come early and remained. The time of average arrival may be set down at about the 12th of April in the southern part of the State, not much time therefore passing before they reach all parts of it. In 1884 they were not in the more southern tier of counties till the 27th of April, whereas in 1875, according to my notes, they arrived in the latitude of Minneapolis by the 8th, and in 1885 on the 7th of the month. . . . . They retire from the State exceptionally early, not even waiting for the first frost, and they are usually gone by the 25th of August. In 1870 Mr. W. L. Tiffany, a very competent observer, reported them clean gone, as well as the Purple Martins, on the 23rd of that month. Their departure on that occasion was noticed by many observers of the habits of the birds, as there was an unusual demonstration of preparation by both species for many hours before the first movement took place."

Mr. Dwight states that in the Pennsylvanian Alleghanies the White-bellied

Swallow was observed by him "only on North Mountain, where one or two pairs were nesting in a barn." Mr. Coombs, in his notes from St. Mary's, Louisiana, observes that it is a spring and autumn migrant, remaining for a longer period in the latter season. He noticed flights as late as the 25th of November.

In the Caloosahatchie region of Florida Mr. W. C. D. Scott states that the present species is not only a migrant, but that enough remain during the winter to allow the species to be regarded as resident, and not casual, at that season. The same careful observer found this Swallow on the Tortugas off Western Florida, but it was not common. A small flock made its appearance on the 29th of March, and remained near by all that day and part of the next. There were in all about a dozen birds, two of which were procured.

Mr. Attwater records it as a common migrant near San Antonio, in Texas.

According to Mr. Streator, this species is a common summer resident in the coast-region of British Columbia, and breeds there. Mr. John Fannin found that it was more abundant east of the Cascades.

Mr. Belding gives some additional notes on this species in his paper on the birds of the Pacific District:—At San Diego he says that it is "of occasional occurrence in winter; not seen at Campo and 60 miles south in May, 1884. Perhaps none breed so far south as San Diego, where it was abundant in February, but not seen after the 1st of April."

At Santa Cruz, San José, and Marysville, it is an abundant summer resident. Near Stockton on the 5th and 6th December he noticed about a hundred specimens. He also saw on December 5, 1878, a large flock. On January 18, 1855, he saw hundreds or thousands in a drive of six miles in the country. The next day being densely foggy, none were seen. It is a very common summer resident of Central California, more especially in the valleys and foot-hills, nesting about buildings as well as in knot-holes of trees in the country. He saw a pair carrying grass into a knot-hole at Stockton as early as March 25, 1879.

Mr. Belding's dates of the arrival of this Swallow, derived from many sources, show that it has been noticed in California as early as the 18th of January, and many instances are given of its arrival in February. In British Columbia its arrival is later, as Mr. Fannin noticed its arrival on the 13th of March, while Mr. Anthony gives the 4th of April as its arrival in Oregon.

Dr. C. Hart Merriam's account of the Death Valley Expedition contains the following note:—"White-bellied Swallows were seen in a few places during migration. Several were seen at Ash Meadows, Nevada, March 12, and a number near the Colorado River, March 10–13. At Furnace Creek, Death Valley, it was common about the reservoir, March 23–24, and again in the middle of April. A few were seen in Johnson Cañon in the Panamint Range, April 4, and Mr. Nelson observed stragglers at the head of Willow Creek, in the same range, the last of May."

In his paper on the birds collected in North-eastern Sonora and North-western

Chihuahua, Mr. Allen records the White-bellied Swallow from San Diego, on the eastern slope of the Sierra Madre, from the 24th to the 26th of February.

For the geographical distribution of this species, *vide infrà*, Plate 35 [Map].

TACHYCINETA THALASSINUS [*anteà*, p. 175].

Add :—

Tachycineta thalassina, Belding, Occ. Papers Calif. Acad. Sci. ii. p. 191 (1890); C. Hart Merriam, N. Amer. Fauna, no. 3, p. 98 (1890); id. N. Amer. Fauna, no. 5, p. 104 (1891); R. H. Lawrence, Auk, ix. pp. 46, 356 (1892); Anthony, t. c. p. 367; C. Hart Merriam, N. Amer. Fauna, no. 7, p. 111 (1893); Allen, Bull. Amer. Mus. Nat. Hist. v. p. 40 (1893).

In his paper on the birds of Idaho, Dr. C. Hart Merriam writes:—"I found this species abundant along Snake River and Big Lost River in July. Common in Birch Creek Valley until the middle of August; a few seen afterward." The same author observed the species also common in the parks of the pine plateau of San Francisco.

Mr. R. H. Lawrence, writing of the birds of Gray's Harbour, Washington Co., says that the Violet-and-Green Swallow was a pretty common summer resident on the harbour, especially at Hoquiam. None were noticed at Stevens Prairie, but it was common at Acosta in April, and Mr. Lawrence also noticed two individuals of the species at Astoria in Oregon on the 27th of March.

During the Lumholtz Archæological Expedition to North-eastern Sonora and North-western Chihuahua, the present species is recorded by Mr. Allen as having been obtained at Bisbee and San Pedro in South-eastern Arizona, in July and August, and again at San Diego on the eastern slopes of the Sierra Madre on the 25th of February.

Mr. Belding, in his paper on the birds of the Pacific District, has given some interesting notes on this bird's distribution which add considerably to our article given above. He writes:—"Not noticed immediately on the coast about San Diego, where trees are scarce. My latest Californian record is 'Big Trees, September 25,' though Dr. Cooper saw a large flock, Santa Cruz, Oct. 5. I have never found it breeding in the valleys of the northern half of the State, where it is seen as a rare migrant. At Murphy's, breeding in cliffs with *Micropus melanoleucus*."

Mr. Henshaw says that it is an "extremely abundant summer visitant in certain portions of Eastern California and Western Nevada, as, for instance, at Pyramid Lake. Thousands resort to the niches and holes in the faces of rocks for nesting-sites. In the mountains, where it is also abundant, it selects for this purpose the deserted holes of Woodpeckers, giving preference to those in oaks."

In the Volcan Mountains, Mr. O. Emerson noticed five birds flying about for three hours on St. Patrick's Day, when the snow was two inches deep. He also noticed a flock on the 30th of March, and on the 1st of April the birds were frequenting the

oak trees, looking for holes for their summer homes. Mr. F. Stephens says that it is a common summer resident in the San Bernardino Mountains, and it is also a common migrant through the valley. The same excellent observer states that he found it abundant at Agua Caliente in the Colorado Desert, where it was seen every day from the 18th of March to the 15th of April, when he left the locality.

In British Columbia, according to Mr. John Fannin, it is a common summer resident, first seen by him at Buzzard Inlet on the 13th of March, and by the 29th of the same month it was common.

The following excellent note is published by Dr. C. Hart Merriam in his account of the birds of the Death Valley Expedition:—"The Violet-green Swallow is a common summer resident among the mountains, and was frequently seen in the neighbouring valleys while searching for food. Two or three were seen near the upper end of Vegas Wash, Nevada, March 10, and many were observed in Death Valley, at Furnace Creek, April 10, and at Saratoga Springs, near the south end, April 26. In Nevada, Dr. Merriam found it common in Pahranagat Valley, May 22–26, saw it on Mount Magruder, June 8, and in Oasis Valley, June 1. In Utah it was common in the Lower Santa Clara Valley, May 11–15. Mr. Nelson found it a common species in the Panamint and Grapevine mountains, where it bred in the crevices of the lofty cliffs, from the summits down to the border of the surrounding valleys. In the former range Violet-green Swallows were common, and a specimen was secured on the summit of Telescope Peak, June 23.

"In the Argus range it was common about the summit above Maturango Spring, May 12–14, and at Coso four or five came about camp, May 28.

"Mr. Nelson saw the species from the lower part of the Saline Valley to the summit of the Inyo Mountains, in June; up to timber-line in the White Mountains, in July; and at the heads of Owens and Merced rivers, in the Sierra Nevada, in July and August. In Owens Valley this Swallow was common about the lake at Keeler and at Lone Pine during the first half of June. At the latter place it was seen flying about in company with the Cliff-Swallows, White-throated and Cloud Swifts, at the mouth of the cañon, and with the Barn-Swallows over the meadows and marshes. Mr. Stephens found it more or less common in other parts of the valley. It was common along the valley of Kern River, July 3–13; in Walker Basin, July 13–16. Dr. Merriam and Mr. Palmer found it abundant at Old Fort Tejon, where it was breeding in oaks and crevices of the adobe buildings; it was very common about the summit of the Frazier Mountain, July 9, and at the summit of Tejon Pass, July 12. In the High Sierra it was common about the openings at Horse Corral Meadows, August 9–13; in King's River Cañon, August 13–16; Big Cottonwood Meadows, August 25–26; at Soda Springs or Kern River Lakes, September 3; and above timber-line at Mineral King, and along the route from that place to Three Rivers in the western foot-hills, September 10–13. Mr. Bailey found the species numerous at Monterey, September 28 to October 9, and Mr. Stephens saw several at Reche Cañon, September 22–24."

For the geographical distribution of this species, *vide infrà*, Plate 34 [Map].

TACHYCINETA CYANEOVIRIDIS [*anteà*, p. 185].

Add:—

Calichelidon cyaneoviridis, Scott, Auk, vii. pp. 265, 312 (1890).

Callichelidon cyaneoviridis, Cory, Cat. West Ind. B. p. 115 (1892).

Mr. Scott saw two specimens of this Swallow at Garden Key, Dry Tortugas, off the west coast of Florida, on the 7th of April, 1890, one of which he managed to secure.

For the geographical distribution of this species, *vide infrà*, Plate 34 [Map].

GEOGRAPHICAL DISTRIBUTION OF T

←→ Migratory.

←/→ Bird of passage.

←⊖→ Remains locally during the winter.

←Δ→ Transplanted.

←*→ Winter resident.

Δ A

○ P

◯◯ C

∼ V

≈ A

	Nearctic Region.										Neotropical Region.								Palæ		
	Arctic Sub-Region.		Cold Temperate Sub-Region.				Warm Temperate Sub-Region.					Central American Sub-Region.								Eurasian Sub-Regi	
							Humid Province.		Arid Province.												
	Arctic Province.	Alaskan Arctic Province.	Hudsonian Province.	Canadian Province.	Sitkan Province.	Aleutian Province.	Appalachian Sub-Province.	Austro-Riparian Sub-Province.	Campestrian Sub-Province.	Sonoran Sub-Province.	Antillean Sub-Region.	Mexican Province.	Isthmian Province.	Sub-Andean Sub-Region.	Amazonian Sub-Region.	Brazilian Sub-Region.	Patagonian Sub-Region.	Arctic Sub-Region.	European Province.	Central Siberian Province.
1. *T. albiventris*	..	..	..	..	..	..	..	..	..	..	..	..	..	○	○	○				
2. *T. leucorrhous*	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	⊞	⊞ ←/→			
3. *T. albilinea*	..	..	..	..	..	..	..	..	..	..	..	○	○	○						
4. *T. meyeni*	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	⊞			
5. *T. bicolor*	..	⊞	⊞	⊞	⊞	..	⊞	←*→	⊞	←*→	←*→	←*→	←*→							
6. *T. thalassinus*	..	..	..	..	..	..	..	..	⊞	←*→	..	←*→								
7. *T. cyaneoviridis* ..	..	..	..	..	..	..	..	..	..	..	○									
1. *P. borbonica*	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
2. *P. madagascariensis*	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
3. *P. brazzæ*	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

NERA TACHYCINETA AND PHEDINA.

V Guest.

† Wanderer.

Rarely
Generally } nesting.
In colonies

	Ethiopian Region.								Indian Region.				Australian Region.						
Himalo-Caucasian Sub-Region.	Saharan Sub-Region.	Soudanese Sub-Region.	West-African Sub-Region.	Abyssinian Sub-Region.	East-African Sub-Region.	South-African Sub-Region.		Cameronian Sub-Region.	Lemurian Sub-Region.	Indian Peninsular Sub-Region.	Indo-Malayan Sub-Region.	Himalo-Chinese Sub-Region.	Celebean Sub-Region.	Moluccan Sub-Region.	Papuan Sub-Region.	Australian Sub-Region.	New-Zealand Sub-Region.	Fijian Sub-Region.	Hawaiian Sub-Region.
						Cape Province.	Natalese Province.												
..	..	..	..	..	..	..	..	..	○										
..	..	..	..	..	..	..	..	..	○										
..	..	..	○																

Genus V. PHEDINA.

Type.

Phedina, Bp. Rivist. Contemp. Torino, 1857, p. 4 . . . . . *P. borbonica.*

Range. Islands of Madagascar, Mauritius, and Réunion. Also occurring on the Congo in West Africa.

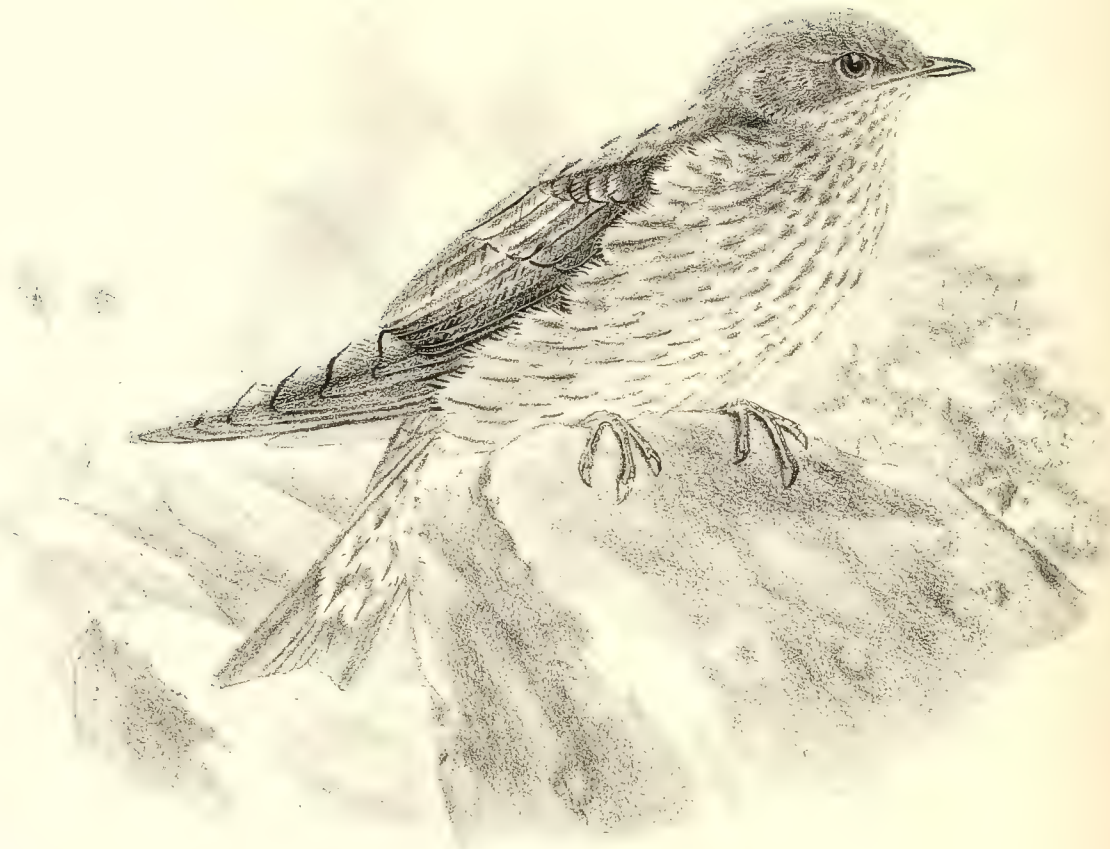
Clavis specierum.

a. Guttur et præpectus fuscescentes.

a'. Subtùs omnino saturatè cineracea, nigro obscurè striolata . . . 1. *borbonica*, p. 201.

b'. Guttur et præpectus cinerea, nigro striolata: abdomine albo . . 2. *madagascariensis*, p. 205.

b. Gastræum totum album, nigro striolatum . . . . . 3. *brazzæ*, p. 207.



Mintern Bros

PHEDINA BORBONICA (*Gm.*).

BOURBON STRIPED SWALLOW.

La Grande Hirondelle brune à ventre tacheté, ou l'Hirondelle des Blés, Montb. Hist. Nat. Ois. vi. p. 694 (1779).

Hirondelle de l'isle de Bourbon, Daubent. Pl. Enl. vii. pl. 544.

Wheat Swallow, Lath. Gen. Syn. ii. pt. 2, p. 581 (1783).

Hirundo borbonica, Gm. Syst. Nat. i. p. 1017 (1788); Gray, Gen. B. i. p. 58 (1846); Schl. & Pollen, Hist. Nat. Madag., Ois. p. 68 (1868, pt.); Gray, Hand-l. B. i. p. 71, no. 834 (1869).

Cotyle borbonica, Bp. Consp. i. p. 342 (1850).

Phedina borbonica, Bp. C. R. xli. p. 977 (1854); id. Rivist. Contemp. Torino, 1857, p. 4; E. Newton, Ibis, 1861, p. 271; Maill. Notes Réunion, p. 13 (1863); E. Newton, Ibis, 1862, p. 270, note; id. Ibis, 1863, p. 340, note; Coquerel, Alb. Réunion, 1865, pp. 19, 20, fig. 2; Sharpe, P. Z. S. 1870, p. 295; id. Cat. Afr. B. p. 45 (1871); A. & E. Newt. Ibis, 1876, p. 284; Hartl. Vög. Madag. p. 63 (1877); Sharpe, Cat. Birds in Brit. Mus. x. p. 122 (1885); E. Newton, Trans. Norfolk Nat. Soc. iv. p. 549 (1888).

P. saturatè brunnea, angustè nigro striolata: alis caudâque nigricantibus concoloribus: loris et facie laterali saturatè brunneis: subtùs brunnea, latiùs nigro striolata, gutture, abdomine imo et subcaudalibus albicantioribus.

Hab. in insulis Mascarenis, 'Mauritius' et 'Réunion' dictis.

Adult. Above dark greyish brown, the centres of the feathers marked down the shaft with a narrow streak of black, very distinct on the rump; wing-coverts dark blackish brown; quills black above, greyish underneath; tail blackish brown above, dark brown beneath, paler on the inner web; lores black; cheeks, sides of the neck, and breast greyish brown, with darker shaft-stripes; rest of the under surface of the body white, longitudinally striped with dark brown, the upper part of the breast and flanks somewhat greyish: "bill and feet black; iris brown" (*Pollen*). Total length 5·4 inches, wing 4·65, tail 2.

Hab. Mauritius and La Réunion.

From the notes which are given below it will be seen that this Swallow is in danger of becoming extinct, and there cannot be the slightest doubt that it exists now in painfully diminished numbers in places where it was common one hundred years ago.

Writing of the species in 1779, Montbeillard gave the following note on its habits in

La Réunion:—"The Vicomte de Querhoent has frequently observed these Swallows flying about in the neighbourhood of a cutting which he had made in one of the mountains, and this induced him to believe that the birds roosted for the night in holes in the ground or in clefts of the rocks, like our Sand-Martins and Swifts. They nest in all probability in the same holes, and this is the more likely, as their nests are not known elsewhere in the island. The only information which this gentleman could gain respecting the nidification of the species in La Réunion was derived from an old Creole, who informed him that the breeding-season was in September and October, that he had taken many nests in caves and holes in the rocks, that the nests were composed of straw and feathers, and that all the eggs which he had seen were greyish white, minutely dotted with brown."

Sir Edward Newton in his "Ornithological Notes from Mauritius," published in 'The Ibis' for 1861, wrote as follows:—

"This very local species is tolerably common. They seem fond of feeding over the sand at low water and sitting on it, after the manner of Sand Martins in England, uttering at the same time a most peculiar whistle for a Martin. When flying they have a note which very much resembles that of a Bee-eater, as far as my recollection goes of that bird's cry when passing through Egypt in 1859. These birds are also given to perching on trees; and I noticed three that were in the habit of taking up their position on the same bough every day at about the same hour, probably awaiting the falling of the tide. They are, I think, early breeders. In a small cavern on the western face of the east side of the Baie du Cap, I saw several, and, from their manner, I am certain that they either had nests or were about to build. I observed one which had its back of a dark ash-brown; I had no gun with me at the time, and the individual never showed itself again."

In his address recently delivered, as President of the Norfolk and Norwich Natural History Society, Sir Edward speaks of this Swallow:—"That other birds of Mauritius are dwindling in numbers there is, I think, no doubt. Since my residence in the island, a law has been passed which affords them, I trust, some protection, and may possibly preserve them to future generations. Yet there is one which very nearly came to an end in my time, and though not quite extinct in the island, I may just mention the circumstance relating to it. This is a Swallow or Martin belonging to the genus *Phedina*, and is one of the few land-birds that is found in Mauritius and Réunion. In Mauritius it seems, so far as my experience goes, to have been always very local, and its numbers were so much reduced by a cyclone which ravaged the island between the 12th and 17th February, 1861, that I never afterwards saw but three or four from that time till my departure in 1878."

The following note is taken from Mr. Pollen's account of the species in the 'Faune de Madagascar':—

"With regard to the species in Réunion, M. Coquerel says:—'This Swallow, which is found in Mauritius and Madagascar, is common in Réunion. A very remark-

able variety, which is known in this country under the name of the *Hirondelle des galets*, and which rests, in fact, on the shingle of the sea-side banks, constitutes perhaps a distinct species: it is a little larger, with the bill stronger, the tarsus and the toes are more slender, and the claws less stout and longer; the upper part of the body and tail and the larger quills have less buff in the brown, and the underparts of the body are clear grey streaked with brown. This indicates a bird similar to that of Madagascar, but it probably does not differ from true *H. borbonica*, except by being in fuller plumage.

"This species is becoming every day rarer in the island of Réunion as well as in Mauritius, and, as a matter of fact, it is confined to certain localities; we have observed it in the mountains situated between La Possession and the town of St. Paul, principally near the manufactory of our good friend Rétout. These birds often rest on branches of trees or on rocks, but it is a mistake when the illustrious Buffon pretends that they fly round about the ships which happen to be in the roads: their flight is very swift and resembles that of our Swallows. According to M. Jean Rétout, a clever hunter living at Possession, this species is also found in the Savannah which extends between that place and St. Paul, and is known as the Point des galets; the inhabitants of Réunion pretend that of this species, which they call the *Hirondelle des blés*, there is found a variety to which they give the distinguishing name of *Hirondelle des galets*. I furnished some notes as well as a figure of this species to our friend M. Coquerel, who has inserted them in his memoir in the fourth volume of his album of La Réunion."

The description and figure of this species are taken from a specimen in the British Museum.



MADAGASCARIENSIS.

PHEDINA MADAGASCARIENSIS, *Hartl.*

MADAGASCAR STRIPED SWALLOW.

Progne borbonica (nec Gm.), Cass. Cat. Hirund. Mus. Philad. Acad. p. 10 (1853).

Phedina madagascariensis, Hartl. J. f. O. 1860, p. 83; id. Beitr. Faun. Madag. p. 27 (1861); Vinson, Voy. Madag. p. 201 (1865); Sharpe, P. Z. S. 1870, pp. 295, 388; id. Cat. Afr. B. p. 46 (1871); id. P. Z. S. 1875, p. 78; Hartl. Vög. Madag. p. 65 (1877); Sharpe, Cat. Birds in Brit. Mus. x. p. 123 (1885).

Phedina, sp. indet., Roch & E. Newt. Ibis, 1862, p. 270; E. Newt. Ibis, 1863, p. 270.

Hirundo borbonica, Schl. P. Z. S. 1866, p. 421 (pt.); id. & Pollen, Hist. Nat. Madag., Ois. p. 68 (1868, pt.).

Phedina borbonica, var. *madagascariensis*, Milne-Edwards & Grandid. Hist. Nat. Madag. xii. Ois. p. 395, pls. 150, 151, 164 *a* (1883).

P. similis *P. borbonicæ*, sed magis cinerascens, et subtùs albicans minimè fumosa.

Hab. in insulâ 'Madagascar' dictâ.

Adult. Above rather pale brownish grey, the shafts of all the feathers being distinctly marked; wing-coverts and quills blackish brown, the latter paler underneath; tail dark brown, somewhat lighter on the inner webs; lores black; cheeks, side of the neck, and breast greyish brown, with darker shaft-stripes; rest of the under surface of the body white, with thin longitudinal stripes; the lower part of the abdomen and under tail-coverts pure white, the shafts of the feathers only indicated by a narrow line of brown; sides of the breast and flanks greyish brown: "bill black; feet dark brown" (*Grandidier*). Total length 5·5 inches, wing 4·7, tail 2.

The greater length of the under tail-coverts in the Madagascar bird noticed by us (P. Z. S. 1870, p. 389) does not seem to hold good, on examining the series in the Museum. The wing in the Madagascar bird varies from 4·45 to 4·85 inches. The Réunion birds have the wing 4·35, the Mauritius ones 4·7 to 4·75.

The Madagascar birds are easily distinguished by their lighter and greyer colour, white abdomen, and nearly white under tail-coverts, which have only a black shaft-line; in the Mauritius and Bourbon bird the brown colour overshadows the whole of the underparts, and there is none of the grey colour on the upper surface; the under tail-coverts, as a rule, partake of the dingy colour of the under surface, but they are decidedly whiter in some specimens than in others, and show only brown mottlings and black shaft-lines, but they are never so white as the Madagascar bird.

Hab. Madagascar.

By the majority of writers this species is only considered to be a form or race of

P. borbonica of La Réunion and Mauritius, but the constancy of the characters on which it has been separated from that bird convinces us that these two Swallows are really distinct species.

The accounts of the habits of *P. madagascariensis* vary little from those of its relative in Mauritius, concerning which more details have been published by travellers. M. Grandidier, in his splendid work on the Natural History of Madagascar, gives the following note:—"The *Phedina* of Madagascar, which is common throughout the whole island, has the same habits as other Swallows. It is as lively and as graceful in its movements as our familiar European species, and, like that bird, it courses unceasingly over the open ground in pursuit of its insect-prey, but it is not so familiar as our *H. rustica* is with mankind. It is not uncommonly seen perched on the branches of a tree, as well as on rocks. Coquerel says that in La Réunion *Phedina borbonica* constructs its nest in caverns, the nest being of plastered earth attached to the face of the rocks. It is probable that the Madagascar race nests in the caverns which are found in the northern parts of the island, or in the fractures in the great blocks of granite which are so frequent in Madagascar. The eggs are white, dotted with clear brown, more abundantly at the larger end.

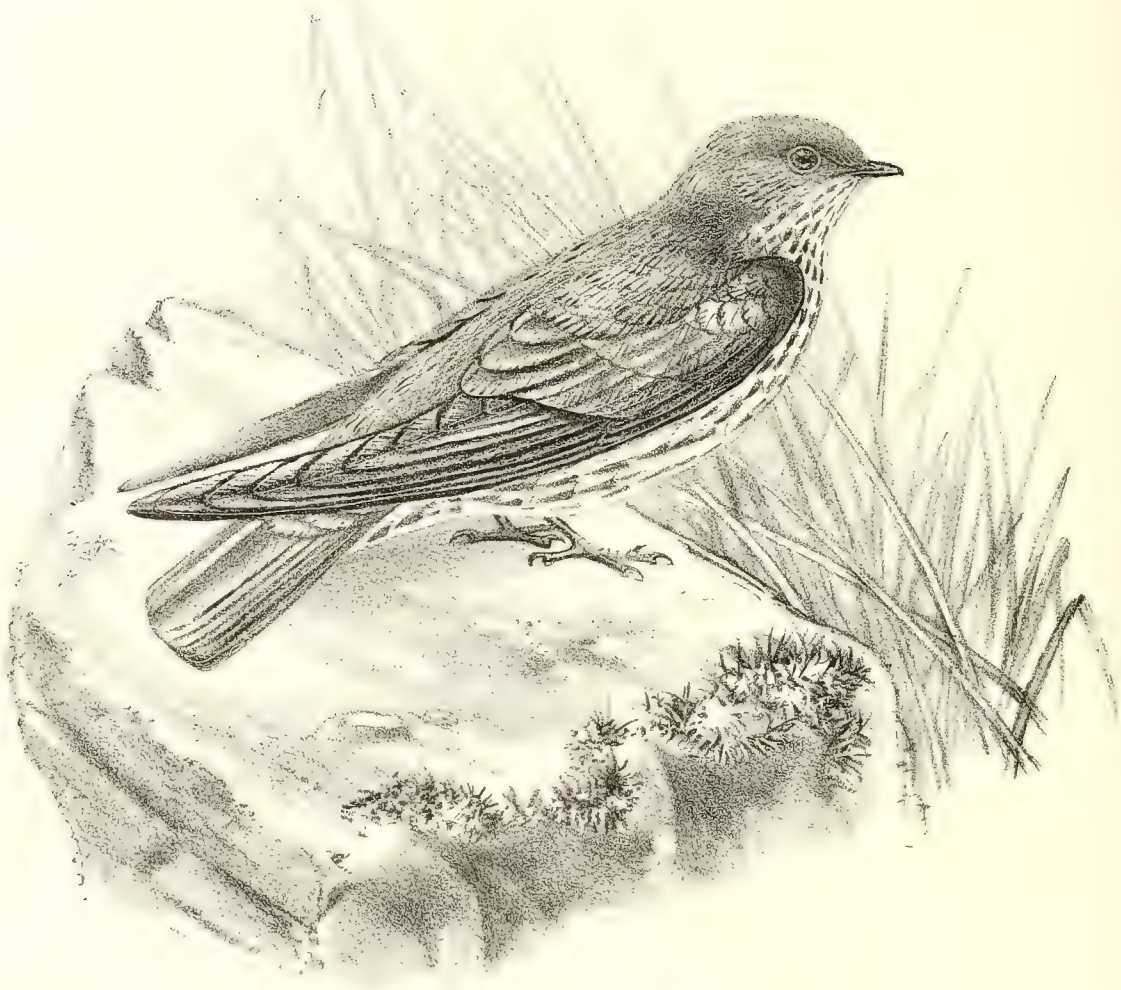
"These birds are called by the same name as the Swifts: *Manaviandro* (lit. 'Bats of the day'); *Fitiliandro* or *Voronandro* (lit. 'Birds of the day'); or *Sidintsidina* (lit. 'Something which flies without cessation'). The Hovas call it *Kiriodamtra*, the Betsileo and Antaimorona people *Firiringa*; the Bara and the Antanala *Firio*, words whose root seems to be *riona* or *ringito*, which mean 'galloping through the sky or passing rapidly by without stopping.'"

Notes on the osteology of *Phedina*, with excellent figures, are given by Professor Alphonse Milne-Edwards in the work above quoted.

Messrs. Pollen and Van Dam remark:—"The habits of the Madagascar bird are the same as those of the La Réunion species. During our stay at Ambassuana on the 7th of October, 1864, we were witness to the assembly of a large band of these Swallows before their flight, when they formed a formidable crowd. They mounted in the air, crossing hither and thither, before going off in a south-westerly direction, and uttering continuous cries. Among the Sakalava of the north this Swallow is called *Manawry*. We have met with it also in Nossi-Bé, near the lake of Pombylaba."

The Rev. Deans Cowan informs me that he procured eggs of a Swallow in caverns; they are now in the possession of Mr. Stoate of Burnham, who has identified them as the eggs of the present species.

The descriptions and figure are taken from specimens in the British Museum.



Mintern Bros.

PHEDINA BRAZZÆ, *Oustalet.*

DE BRAZZA'S STRIPED SWALLOW.

Phedina brazzæ, Oustalet, Le Naturaliste, July 1886, p. 300.

P. similis *P. madagascariensi*, sed subtùs omninò alba, nigro striolata, gutture minimè cineraceo distinguenda.

Hab. in regione Congicâ Africæ occidentalis.

Adult male. All the upper surface of the body silky brown, slightly glossed with green on the wings and tail, and slightly streaked in an irregular manner with brown on the head and back; the chin, throat, and abdomen are of a silvery white, with very well-defined brown streaks on the centre of the feathers. These streaks, very fine on the throat and breast, become rather larger on the flanks, and especially on the under tail-coverts; they are also distinguishable, but less distinctly marked, on the under wing-coverts: "bill, feet, and iris bronze" (*De Brazza*). Total length about 7 inches, wing 3·9, tail 2·2. (*E. Oustalet.*)

Hab. Nganciou station, River Congo.

The discovery of a species of *Phedina* in the Congo Region is a very interesting fact, as the genus has hitherto been supposed to be peculiar to Madagascar and the Mascarene Islands.

When we were in Paris last we had only time to take a hurried look at the type of *P. brazzæ*, and were not able to compare it critically with *P. borbonica*; but it certainly appeared to be a true *Phedina*, and quite distinct from *P. borbonica* and *P. madagascariensis*. It is a much smaller bird than the two last-named species, and has no grey on the throat, the under surface being entirely white with blackish streaks.

The type specimen, marked a male, was obtained by M. de Brazza at a post called Ganciu or Nganciou, on the Congo, on the 19th of July, 1881.

The figure in the Plate has been drawn from a sketch of the typical specimen made for us by Mr. Keulemans when he was last in Paris. The description has been translated from the original one of Dr. Oustalet.

For the geographical distribution of this species, *vide infrà*, Plate 13 [Map].

APPENDIX

TO THE

GENUS PHEDINA.

PHEDINA BORBONICA [*anteà*, p. 201].

Add :—

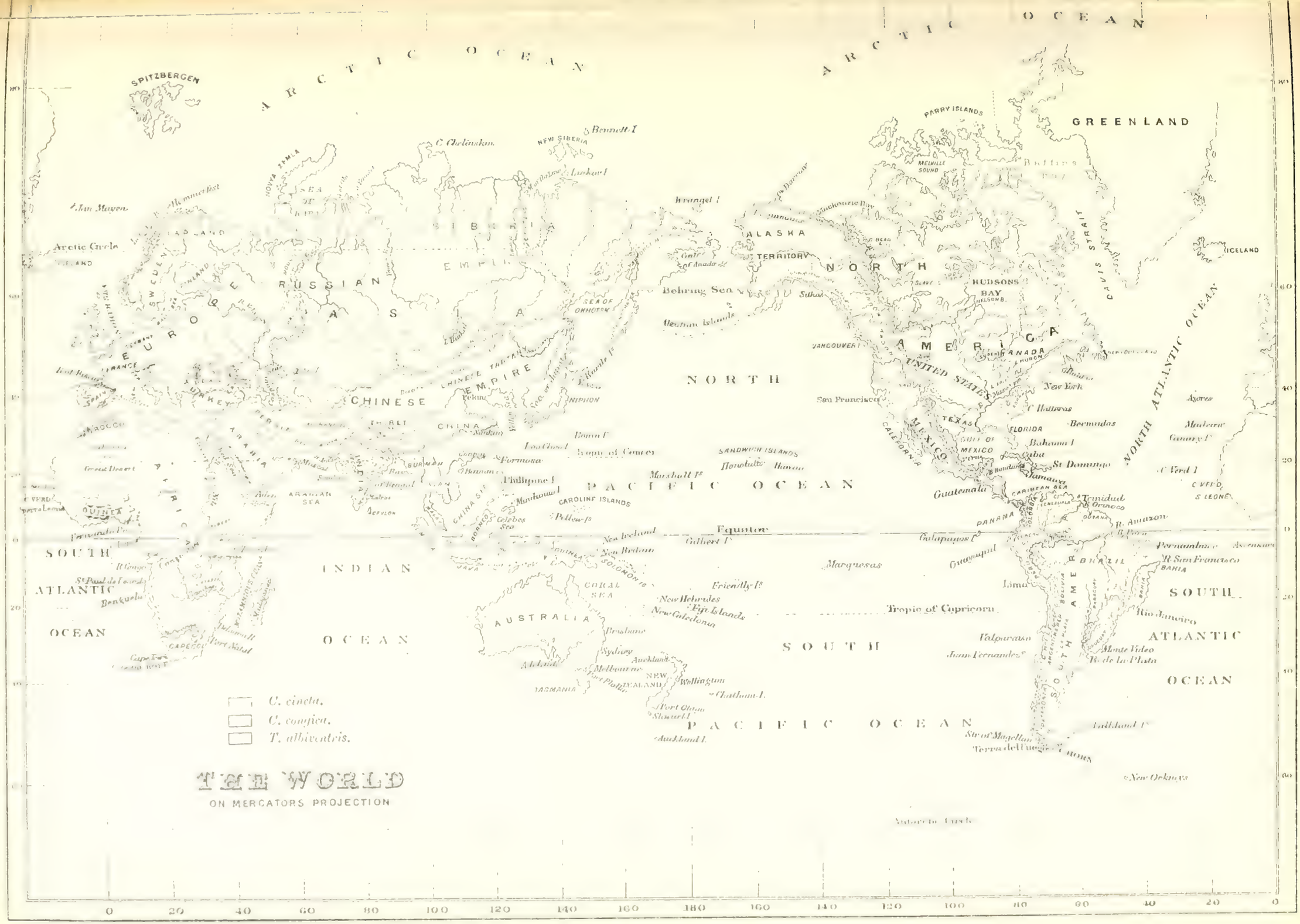
For the geographical distribution of this species, *vide infrà*, Plate 43 [Map].

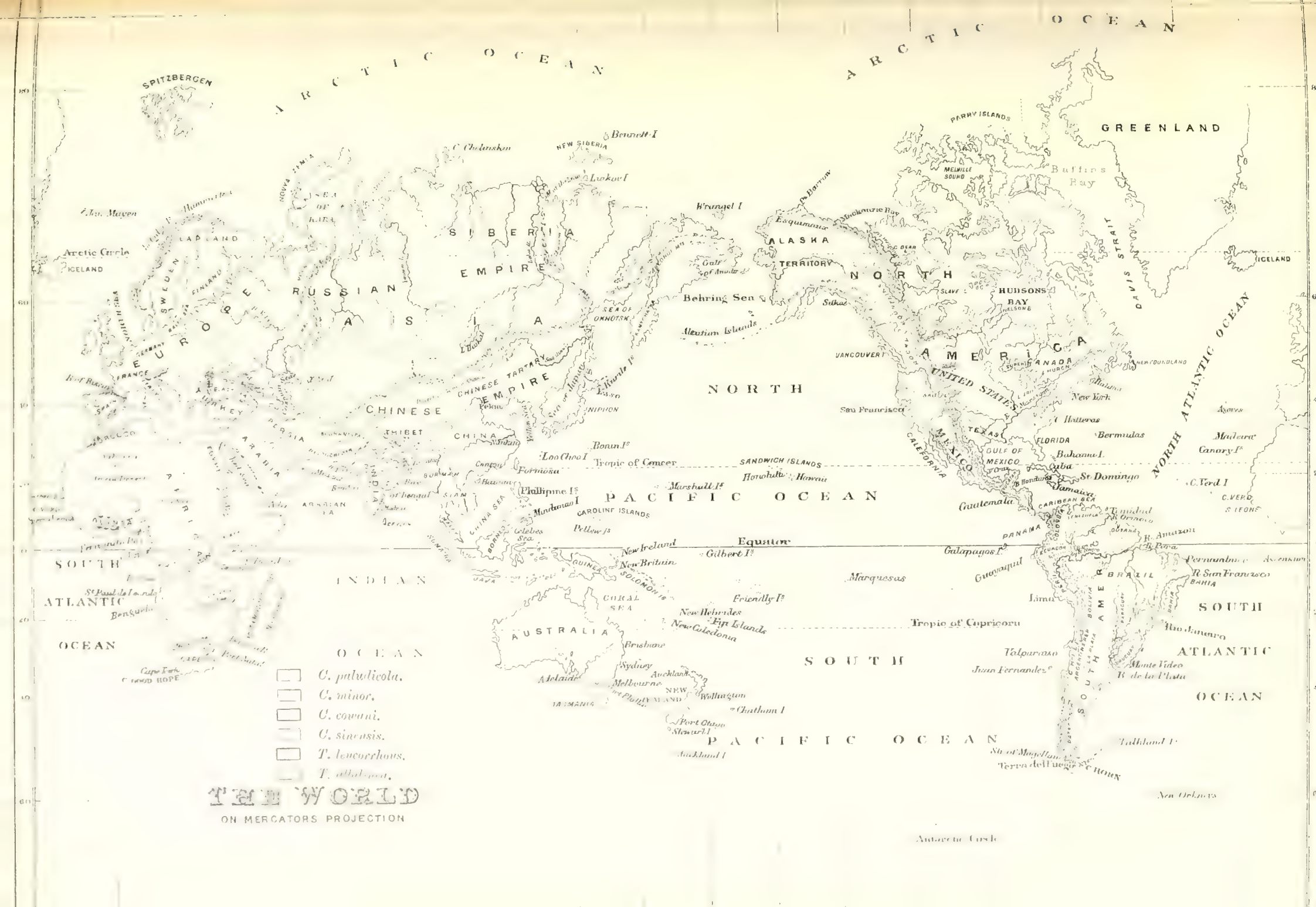
PHEDINA MADAGASCARIENSIS [*anteà*, p. 205].

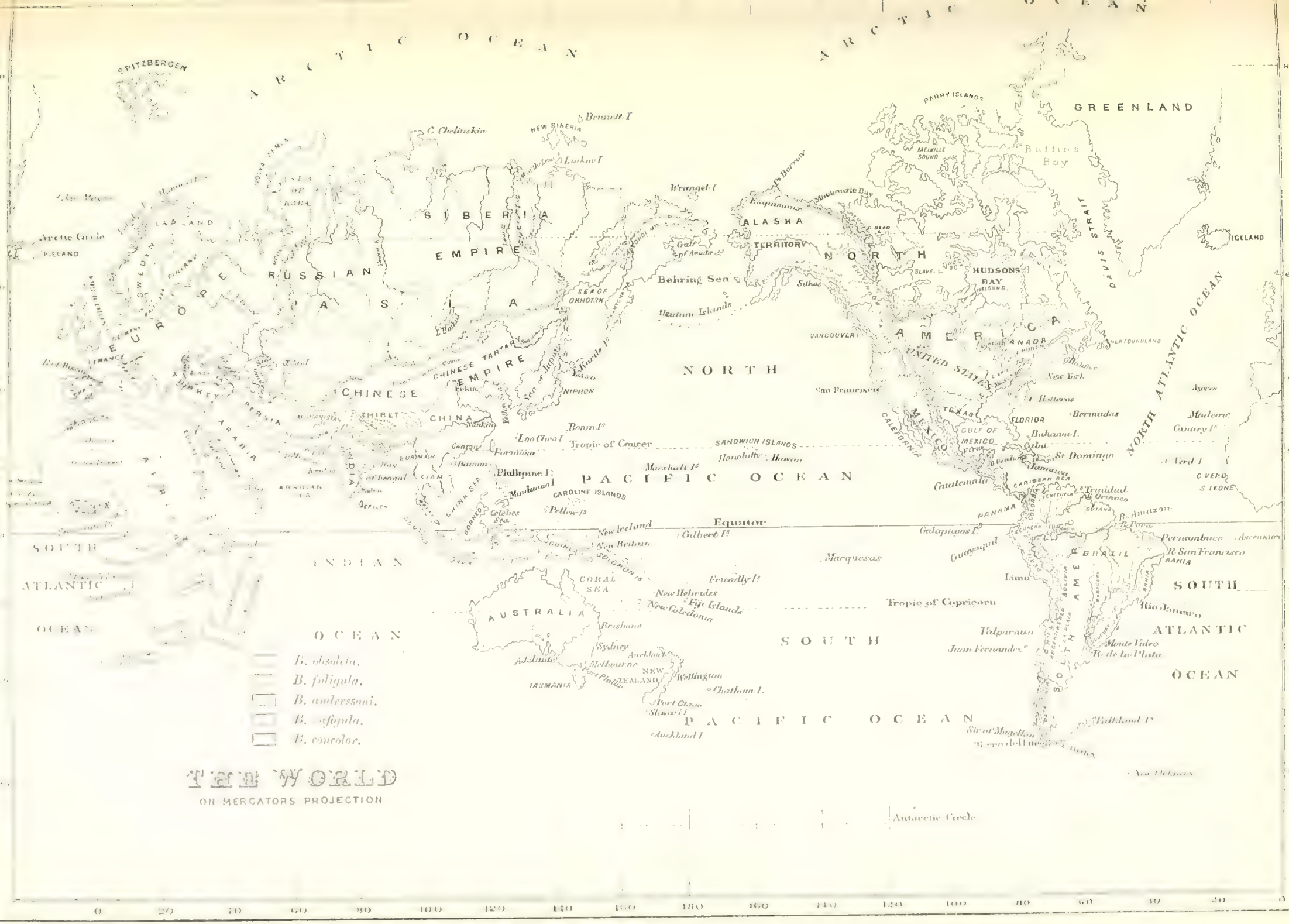
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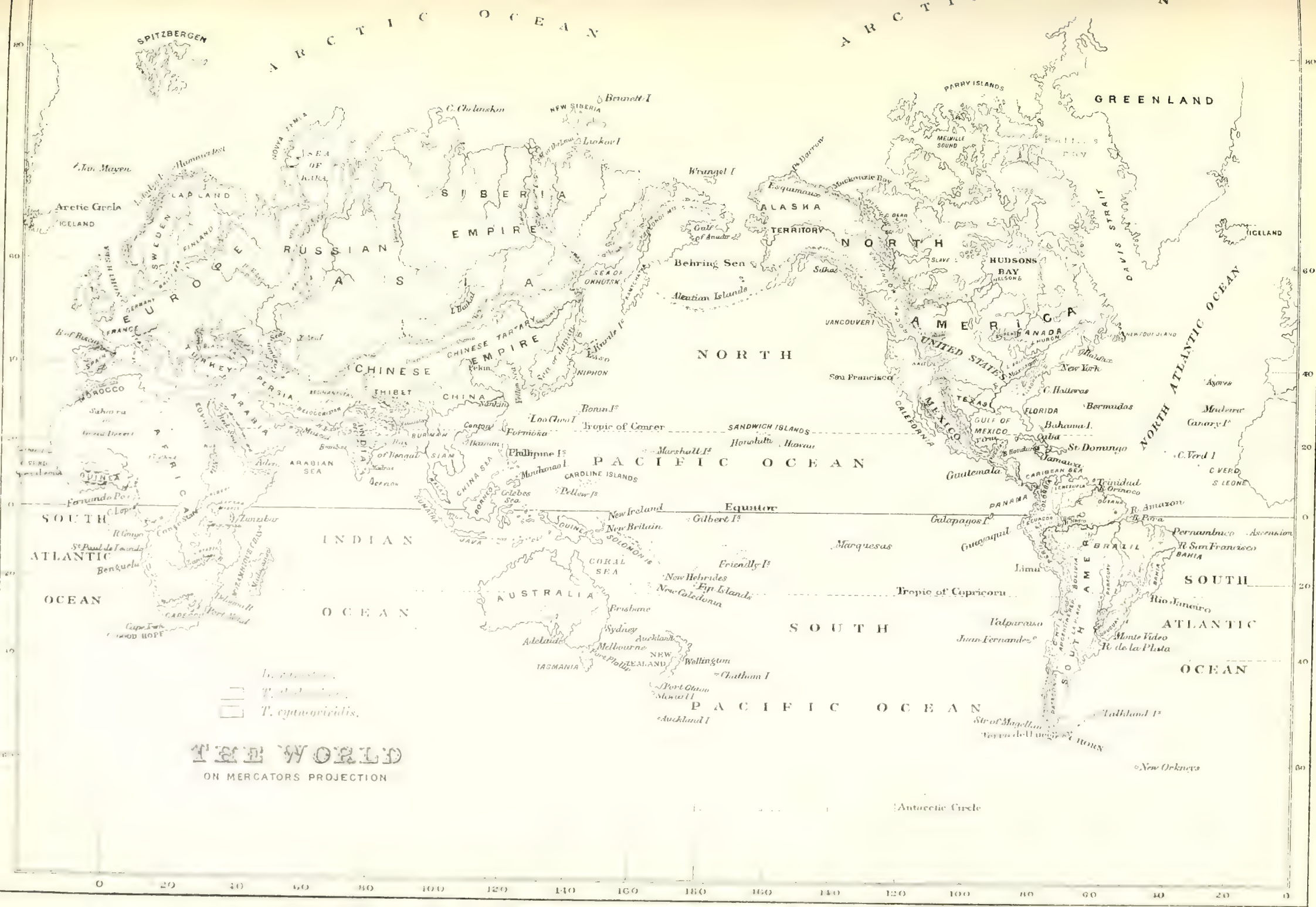
For the geographical distribution of this species, *vide infrà*, Plate 43 [Map].


ARCTIC OCEAN
SPITZBERGEN
NOVA ZEMBLA
NEW SIBERIA
Bennett I.
Liakov I.
Wrangel I.
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EMPIRE
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Formosa
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Bonin I.
Hainan
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Marshall Is.
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Mackenzie Bay
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SEA OF OKHOTSK
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NIPHON
Sea of Japan
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Gulf of Bengal
SIAM
BORNEO
Celebes Sea
Timor
Java
Sumatra
Ceylon
Madras
Bombay
Delhi
Ava
Siam
Cochin China
Malacca
Singapore
Borneo
Celebes
Moluccas


C. cincta.
C. conjicta.
T. albiventris.
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C. Horn
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Persian Gulf
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Bussorah
Bagdad
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BRUCCO
Cape Verd Is
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Chelaskin
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NIPHON
Yesso
Sea of Japan
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Yukon
Mackenzie R
Slave L
Athabasca L
Winnipeg L
Superior L
Huron L
Michigan L
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Davis Str
Melville Sound
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Liakov I
C. Chelaskin
Jan Mayen
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Lapland
Sweden
Finland
Russia
Europe
Siberia
Russian Empire
Chinese Empire
Chinese Tartary
China
Pekin
Nankin
Canton
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Thibet
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Borneo
Java
Sumatra
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Arabian Sea
Persian Gulf
Red Sea
Mecca
Bussorah
Bagdad
Constantinople
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Germany
France
Spain
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Wellington
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Port Otago
Stewart I
Auckland I
Tasmania
Pacific Ocean
South Pacific Ocean
Indian Ocean
South Atlantic Ocean
North Atlantic Ocean
Arctic Ocean
Antarctic Circle
C. Paludicola.
C. minor.
C. cowani.
C. sinensis.
T. leucorrhous.
T. albicans.
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Bonin Is
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Marquesas
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INDIAN OCEAN
Falkland Is
Strait of Magellan
Terra del Fuego
Horn
New Orleans
Antarctic Circle
B. obsoleta.
B. fuliginula.
B. anderssoni.
B. cæfigula.
B. concolor.
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Arabian Sea
Bay of Bengal
Coral Sea
Tasman Sea
Gulf of Mexico
Caribbean Sea
Hudson Bay
Davis Strait
Baffins Bay
Melville Sound
Barrow Str.
Mackenzie Bay
Esquimaux
Wrangel I
Bennett I
Lakes
Parry Islands
Melville Sound
Iceland
Azores
Madeira
Canary Is
C. Verd Is
Bermudas
Bahama I.
Cuba
Jamaica
St. Domingo
Guatemala
Honduras
Panama
Galapagos Is
Marquesas
Friendly Is
New Hebrides
New Caledonia
Fiji Islands
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New Ireland
Solomon Is
Gilbert Is
Marshall Is
Caroline Islands
Pellew Is
Phillipine Is
Formosa
Loo Choo I
Bonin Is
Kamtschatka
Behring Sea
Aleutian Islands
Sea of Okhotsk
Sea of Japan
Niphon
Yesso
Kurile Is
Nova Zembla
Sea of Kara
Lapland
Arctic Circle
Cape of Good Hope
Cape Horn
Str. of Magellan
Terra del Fuego
Falkland Is
New Orkneys
Sandwich Land
Auckland I
Chatham I
Port Chalmers
Wellington
Auckland
Melbourne
Sydney
Adelaide
Brisbane
Port Phillip
Tasmania
Port Victoria
Port Essington
Port Macquarie
Port Stephens
Port Jackson
Port Dalrymple
Port Lincoln
Port Augusta
Port Western
Port Wood
Port Essington
Port Victoria
Port Macquarie
Port Stephens
Port Jackson
Port Dalrymple
Port Lincoln
Port Augusta
Port Western
Port Wood
Cape Leeuwin
Cape Horn
Cape of Good Hope
Cape Verd
Cape Verd I
Cape Lopez
Cape Colonies
Cape Frio
Cape Blanco
Cape Hatteras
Cape Verd



THE WORLD

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Genus VI. HIRUNDO.

	Type.
Hirundo, Linn. Syst. Nat. i. p. 343 (1766, pt.).	
Hirundo, Schaeffer, Elem. Orn., Genus 100, pl. xl. (1779) . . .	*H. rustica.*
Chelidon, T. Forster, Syn. Cat. Brit. B. p. 55 (1817)	*H. rustica.*
Cecropis, Boie, Isis, 1826, p. 971	*H. capensis.*
Uromitrus, Bp. Rivist. Contemp. Torino, 1857, p. 4	*H. filifera.*
Hemicecropis, Bp. tom. cit. p. 4	*H. dimidiata.*
Lillia, Boie, J. f. O. 1858, p. 364	*H. rufula.*
Waldenia, Sharpe, P. Z. S. 1869, p. 461	*H. nigrita.*

Range. Nearly cosmopolitan.

Clavis specierum.

a. Dorsum posticum et uropygium nitidè cæruleo-nigra, notæo reliquo concoloria.
  a'. Pileum cæruleo-nigrum : frons rufa.
    a''. Guttur intensè rufum.
      a'''. Majores : ala 4·5–4·8 poll. : cauda longa, alæ apicem valdè excedens : subcaudales rufæ, aut albæ rufo tinctæ.
        *a*⁴. Torques præpectoralis nigra, lata, interdum rufo medialiter maculata, minimè interrupta.
          *a*⁵. Subtùs alba, aut lætè rufa (♂ æstiv.) . . . . 1. *rustica*, p. 213.
          *b*⁵. Subtùs castanea . . . . . 2. *savignii*, p. 237.
        *b*⁴. Torques præpectoralis interrupta.
          *c*⁵. Subtùs alba, vix rufo tincta . . . . . 3. *gutturalis*, p. 241.
          *d*⁵. Subtùs castanea . . . . . 4. *tytleri*, p. 249.
          *e*⁵. Subtùs cervina . . . . . 5. *erythrogastra*, p. 253.
      b'''. Minores : ala 4·15–4·2 poll., caudæ apicem excedens : torques præpectoralis nulla.
        *c*⁴. Rectrices haud albo maculatæ . . . . . 6. *tahitica*, p. 275.
        *d*⁴. Rectricum pogonium internum albo maculatum.
          *f*⁵. Subcaudales fumoso-brunneæ.
            *a*⁶. Rectricum maculæ albæ parvæ et transversim positæ.
              *a*⁷. Abdomen albidum : pectus et corporis latera saturatè fumoso-brunnea : alæ caudæ apicem excedentes . . { 7. *javanica*, p. 279 / 8. *namiyei*, p. 287

b^7. Pectus et corporis latera pallidè fumoso-brunnea : abdomen vix dilutius : alæ caudæ apicem æquantes . . . . . 9. *neoxena*, p. 289.

b^6. Rectricum maculæ albæ magnæ, pogonio interno ferè dimidiatim albo.

c^7. Abdomen fumosum . . . . . 10. *angolensis*, p. 293.

d^7. Abdomen album . . . . . 11. *arcticincta*, p. 295.

g^5. Subcaudales albæ . . . . . 12. *lucida*, p. 297.

b''. Guttur album vel fulvescens.

c'''. Major : ala 4·9 poll. : torques præpectoralis nigra, obvia . 13. *albigularis*, p. 303.

d'''. Minor: ala 4·0–4·35 poll.: torques præpectoralis medialiter interrupta . . . . . 14. *æthiopica*, p. 307.

b'. Frons nigro-cærulea, pileo concolor.

c''. Abdomen album.

e'''. Secundariæ extùs albæ . . . . . 15. *leucosoma*, p. 311.

f'''. Secundariæ primariis concolores . . . . . 16. *dimidiata*, p. 313.

d''. Abdomen cæruleo-nigrum, notæo concolor.

g'''. Minor : ala 4·3 poll. : plaga alba gularis conspicua . . 17. *nigrita*, p. 317.

h'''. Major : ala 4·5 poll. : guttur totum cæruleo-nigrum, gastræo concolor . . . . . 18. *atrocærulea*, p. 319.

e''. Abdomen castaneum, gastræo reliquo concolor : subcaudales purpurascenti-cæruleæ . . . . . 19. *nigrorufa*, p. 325.

c'. Pileum totum rufum, capistrum exhibens . . . . . 20. *smithii*, p. 327.

b. Dorsum posticum et uropygium fumoso-brunnea : pileum quoque fumoso-brunneum . . . . . 21. *griseopyga*, p. 335.

c. Dorsum posticum et uropygium rufa.

d'. Pileum rufum.

f''. Major : ala 5·1 poll. : subtùs angustè nigro striolata . . . 22. *cucullata*, p. 337.

g''. Minor : ala 4·2 poll. : subtùs latè nigro striolata . . . . . 23. *puella*, p. 341.

e'. Pileum cæruleo-nigrum, dorso concolor.

h''. Subtùs nigro striolata, plumarum scapis nigris, obviis, latis vel obsoletis.

i'''. Subtùs fulvescentes aut albescentes.

e^4. Uropygium cinnamomeum vel castaneum, posticè albescens . . . . . 24. *rufula*, p. 347.

f^4. Uropygium castaneum, concolor, rariùs posticè albescens.

h^5. Ala 4·9–5·3 poll.

c^6. Uropygium vix nigro striolatum : subtùs rufo tincta, vix nigro striolata . . . . 25. *daurica*, p. 357.

d^6. Uropygium distinctè nigro striolatum : subtùs albescens, conspicuè nigro striolata . . 26. *striolata*, 361.

i^5. Ala 4·3–4·7 poll.

e^6. Subtùs distinctè nigro striolata . . . . 27. *nipalensis*, p. 365.

f^{6}. Subtùs indistinctè striolata . . . . . 28. *erythropygia*, p. 371.

g^{6}. Subtùs obsoletè striolata, lineolis scapalibus vix obviis, interdum absentibus.

e^{7}. Major: ala 4·7 poll.: gastræum vix rufescente tinctum: subalares concolores . . . . . 29. *melanocrissa*, p. 379.

f^{7}. Minor: ala 4·4 poll.: gastræum sericeo-album: subalares concolores . . 30. *domicella*, p. 381.

g^{7}. Major: ala 4·9 poll.: gastræum pallidè castaneum: guttur pallidius . . 31. *emini*, p. 383.

k'''. Subtùs intensè castaneæ.

g^{4}. Minor: ala 4·55 poll.: subtùs distinctè nigro striolata . . . . . 32. *hyperythra*, p. 389.

h^{4}. Major: ala 4·8–5·3 poll.: subtùs obsoletè nigro striolata . . . . . 33. *badia*, p. 393.

i''. Subtùs rufescentes vel pallidè castaneæ.

l'''. Minores: ala minimè 5·3 poll. longa: guttur rufum, gastræo reliquo concolor . . . . . 34. *semirufa*, p. 395. 35. *gordoni*, p. 397.

m'''. Majores: ala 5·7 poll.: guttur albicans.

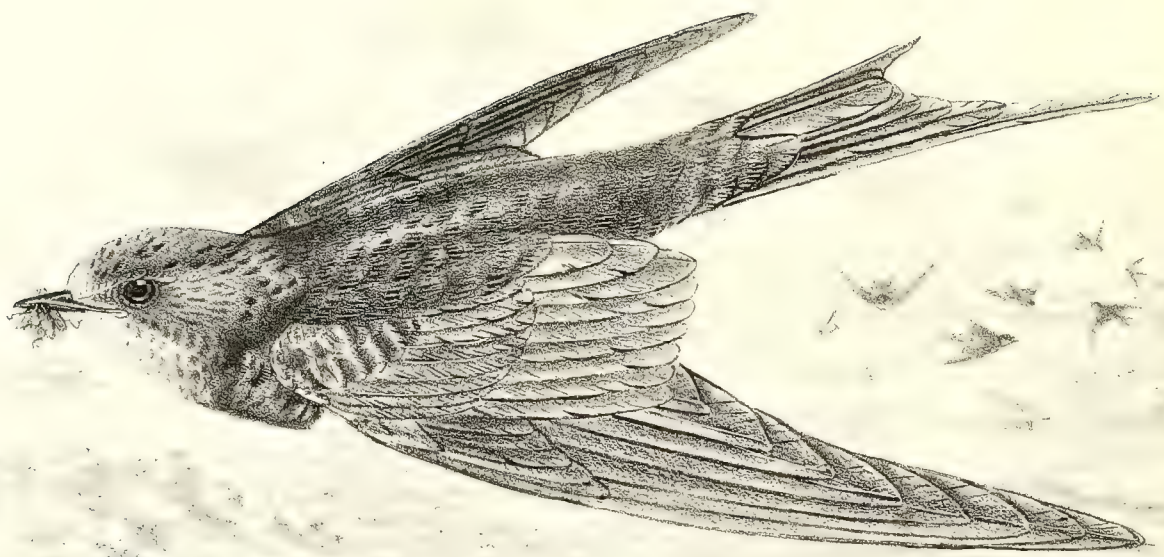
i^{4}. Rectrices haud albo maculatæ . . . . . 36. *senegalensis*, p. 399.

k^{4}. Rectrices albo maculatæ . . . . . 37. *monteiri*, p. 403.

d. Uropygium metallicè viride, notæo reliquo concolor: subtùs purè sericeo-albæ.

f'. Suprà aureo-ænea . . . . . 38. *euchrysea*, p. 407.

g'. Suprà metallicè chalybeo-viridis, vix cuprescens . . . . . 39. *sclateri*, p. 409.



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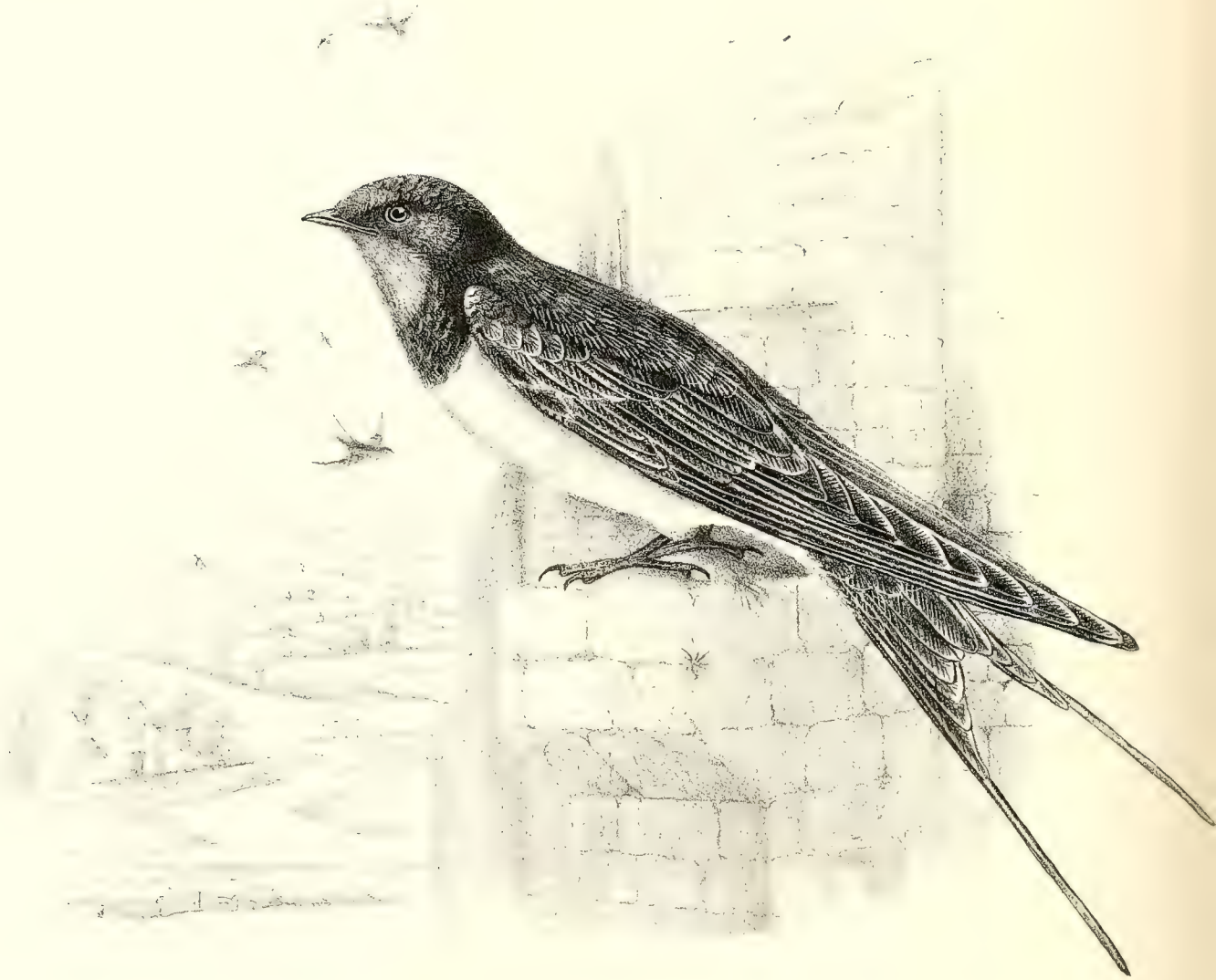


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HIRUNDO RUSTICA, *L.*

CHIMNEY-SWALLOW.

L'Hirondelle de Cheminée, Briss. Orn. ii. p. 486 (1760); Daubent. Pl. Enl. vii. pl. 543. fig. 1; Montb. Hist. Nat. Ois. vi. p. 591, pl. 25. fig. 1 (1779).

Hirundo rustica, Linn. Syst. Nat. i. p. 343 (1766); Temm. Man. d'Orn. i. p. 427 (1820); Roux, Orn. Provenç. pl. 141 (1825); Werner, Atlas, Chelidones, pl. 1 (1827); Ménétr. Cat. rais. Cauc. p. 45 (1832); Naum. Vög. Deutschl. vi. pl. 145. fig. 1 (1833); Gould, B. Eur. ii. pl. 54 (1837); Schl. & Susem. Vög. Eur. vi. Taf. 2. fig. 1 (1839); Macgill. Brit. B. iii. p. 558 (1840); Keys. u. Blas. Wirb. Eur. p. 196 (1840); Nordm. in Démid. Voy. Russ. Mérid. iii. p. 201 (1840); Yarrell, Brit. B. ii. p. 213 (1843); Hodgs. Icon. ined. in Mus. Brit., Passeres, pl. 8 (no. 331); id. in Gray's Zool. Misc. p. 82 (1844); Gray, Gen. B. i. p. 57 (1845); Hutton, J. A. S. Beng. xvi. p. 781 (1847); Gray, Cat. Fissir. Brit. Mus. p. 22 (1848); Blyth, Cat. B. Mus. As. Soc. p. 197 (1849, pt.); Thomps. N. H. Ireland, i. p. 374 (1849); Bp. Consp. i. p. 338 (1850); Cab. Mus. Hein. Th. i. p. 46 (1850); Kjærb. Orn. Dan. Fugle, pl. xiv. fig. 4 (1852); Schl. Vog. Nederl. pl. 57 (1854); Horsf. & Moore, Cat. B. E. I. Co. Mus. i. p. 91 (1854, pt.); Hewits. Eggs Brit. B. i. p. 257, pl. lxv. figs. 3 & 4 (1856); Sundev. Sv. Fogl. pl. xvii. fig. 5 (c. 1856); Grill, Zool. Anteckn. p. 35 (1858); Jaub. et Barth.-Lapomm. Rich. Orn. p. 307 (1859); Salv. Ibis, 1859, p. 334; Linderm. Vög. Griechenl. p. 117 (1860); Naum. Vög. Deutschl., Anhang xiii. Taf. 383. fig. 2 (1860); Schl. Dier. Nederl. Vog. pl. 6. fig. 4 (1861); Hartl. J. f. O. 1861, p. 103; Jerd. B. Ind. i. p. 157 (1862); Gray, Cat. Brit. B. p. 33 (1863); Filippi, Viagg. Pers. p. 346 (1865); Bettoni, Ucc. nidif. Lomb. tav. 30 (1865–70); Degl. & Gerbe, Orn. Eur. i. p. 587 (1867); Drake, Ibis, 1867, p. 425; Loche, Expl. Sci. Algér., Ois. ii. p. 64 (1867); Borggr. Vogelf. Norddeutschl. p. 100 (1869); Doderl. Avif. Sicil. p. 143 (1869); Gray, Hand-l. B. i. p. 68, no. 786 (1869); Keulem. Onze Vogels, pl. 10 (1869); Heugl. Orn. N.O.-Afr. i. p. 150 (1869); Godman, Azores, p. 341 (1870); Godw.-Aust. J. A. S. Beng. xxxix. pt. ii. p. 94 (1870); Fritsch, Vög. Eur. Taf. 2. fig. 4 (1870); Sharpe, P. Z. S. 1870, p. 305; id. & Dresser, t. c. p. 244; Gillett, Ibis, 1870, p. 306; Blanf. Geol. & Zool. Abyss. p. 347 (1870); Finsch & Hartl. Vög. Ostafr. p. 134 (1870); R. Gray, B. W. Scotl. p. 205 (1871); Saunders, Ibis, 1871, p. 205; Jerd. Ibis, 1871, p. 351; Salvad. Faun. Ital. Ucc. p. 51 (1871); Sharpe, Cat. Afr. B. p. 45 (1871); Harting, Handb. Brit. B. p. 35 (1872); Holdsw. P. Z. S. 1872, p. 418; Gurney, in Anderss. B. Dam. Ld. p. 50 (1872); Shelley, B. Egypt, 1872, p. 120; Godm. Ibis, 1872, p. 61;

Antin. & Salvad. Viagg. Bogos, p. 72 (1873); Heugl. Orn. N.O.-Afr. iv. App. p. lv (1873); Hume & Henders. Lahore to Yark. p. 176 (1873); Brooke, Ibis, 1873, p. 237; Gould, B. Gt. Br. vol. ii. p. 5 (1873); Hume, Nests & Eggs Ind. B. p. 72 (1873); id. Str. F. i. p. 164 (1873); Adam, t. c. p. 370; Hume, Str. F. ii. p. 155 (1874); Saxby, B. Shetl. p. 147 (1874); Bouvier, Cat. Ois. Marche, p. 9 (1875); Reichen. J. f. O. 1875, p. 21; Shelley, Ibis, 1875, p. 67; Newton, t. c. p. 272; Dresser, B. Eur. iii. p. 477, pl. 160. fig. 1 (1875); Blyth & Wald. B. Burma, p. 126 (1875); Reichen. J. f. O. 1875, p. 21; Harting, Summer Migr. p. 170 (1875); Irby, B. Gibr. p. 103 (1875); Fallon, Ois. Belg. p. 123 (1875); Hume, Str. F. iii. p. 451 (pt.) (1875); Butler, t. c. p. 451; Brooks, t. c. p. 230; Scully, l. c. iv. p. 131 (1876); Brooks, t. c. p. 254; Sharpe & Bouv. Bull. Soc. France, i. p. 37 (1876); Dresser, Ibis, 1876, p. 188; Ayres, t. c. p. 424; Barratt, t. c. p. 203; Blanf. East. Pers. ii. p. 215 (1876); Hume, Str. F. v. p. 17 (1877); Butler, t. c. pp. 226, 289; Finsch, Ibis, 1877, pp. 50, 57; Davidson & Wend. Str. F. vii. p. 76 (1878); Ball, t. c. p. 202; Legge, B. Ceylon, p. 587 (1879); Fischer & Reichen. J. f. O. 1879, p. 344; Seebohm, Ibis, 1879, p. 16; Hume, Str. F. viii. p. 84 (1879); Scully, t. c. p. 233; Bogd. B. Cauc. p. 115 (1879); Butler, Cat. B. Sind, &c. p. 12 (1879); id. Cat. B. Bomb. Pres. p. 13 (1880); Wardlaw-Ramsay, Ibis, 1880, p. 48; Vidal, Str. F. ix. p. 43 (1880); Barnes, t. c. p. 215; Newton, ed. Yarr. Brit. B. ii. p. 340 (1880); Collett, Norges Fugle, p. 286 (1881); Bocage, Orn. Angola, p. 179 (1881); Shelley, P. Z. S. 1881, p. 565; Giglioli, Elench. Ucc. Ital. p. 64 (1881); Biddulph, Ibis, 1881, p. 47; Scully, t. c. p. 427; Feilden, in Markham's Polar Reconn. p. 338 (1881); Reid, Str. F. x. 1881, p. 17; Davidson, t. c. p. 292 (1882); Butler, Feilden & Reid, Zool. 1882, p. 251; C. Swinhoe, Ibis, 1882, p. 100; Seebohm, t. c. pp. 210, 374; Dixon, t. c. p. 561; B. O. U. List Brit. B. p. 42 (1883); Oates, B. Br. Burm. i. p. 302 (1883, pt.); Davison, Str. F. x. p. 345 (1883); Homeyer & Tancré, Mitth. orn. Ver. Wien, 1883, p. 83; Rochebr. Faun. Sénégamb., Ois. p. 217 (1883); Seebohm, Ibis, 1883, p. 22; id. Hist. Brit. B. ii. p. 171, pl. 17 (1883); Severtz. Ibis, 1883, p. 70; Irby, t. c. p. 153; Eagle Clarke, Ibis, 1884, p. 142; Saunders, t. c. p. 174; Marshall, t. c. p. 408; Sharpe, ed. Layard's B. S. Afr. pp. 362, 840 (1884); Tristr. Faun. & Flor. Palest. p. 61 (1884); Radde, Orn. Cauc. p. 36 (1884); Salvad. Ann. Mus. Civic. Genov. (2) i. p. 120 (1884); Murray, Vertebr. Faun. Sind, p. 102 (1884); Fischer, Zeitschr. ges. Orn. i. p. 357 (1884); Büttik. Notes Leyd. Mus. vii. p. 158 (1885); Sharpe, Cat. B. Brit. Mus. x. p. 128 (1885); Whitehead, Ibis, 1885, p. 27; C. Swinhoe & Barnes, t. c. p. 59; Dixon, t. c. p. 83; Zarudn. Ois. Transcasp. p. 32 (1885); Fischer, J. f. O. 1885, p. 128; Gigl. Avif. Ital. p. 183 (1886); Büttik. Notes Leyd. Mus. viii. p. 248 (1886); Yerbury, Ibis, 1886, p. 14; Parker, t. c. p. 156; Ayres, t. c. p. 286; Sharpe, t. c. pp. 455, 497; Olphe-Gall. Faun. Eur. Occ. fasc. xxii. p. 36 (1887); Scully, J. A. S. Beng. lvi. p. 83 (1887); Reichen. J. f. O. 1887, p. 62; Salvad. Elench. Ucc. Ital. p. 82 (1887); Tait, Ibis, 1887,

p. 190; Reid, t. c. p. 433; Radde, Ornis, iii. p. 487 (1887); Shelley, P. Z. S. 1888, p. 40; Sharpe, Ibis, 1888, p. 200; Bligh, t. c. p. 216; Hume, Str. F. xi. p. 24 (1888); Pleske, Mém. Acad. Imp. St. Pétersb. (7) xxxvi. p. 41 (1888); id. Uebers. Säug. und Vög. Kola-Halbins. pp. 91, 451 (1888); Büttik. Notes Leyd. Mus. x. p. 68 (1888), xi. pp. 116, 130 (1889); St. John, Ibis, 1889, p. 155; Lilford, t. c. p. 329; Eagle Clarke, t. c. p. 542; Saunders, Man. Brit. B. p. 155 (1889); Reichen. Syst. Verz. Vög. Deutschl. p. 35 (1889); Sharpe, Trans. Linn. Soc. (2) v. p. 77 (1889); Gigl. 1° Resoc. p. 309 (1889); id. op. cit. ii. p. 653 (1890); Oates, Faun. Brit. Ind., Birds, ii. p. 277 (1890); Whitehead, Ibis, 1890, p. 49; Meade-Waldo, t. c. p. 429; Brusina, Orn. Croat. p. 58 (1890); Reichen. J. f. O. 1890, p. 117; Gigl. 1° Resoc. iii. p. 512 (1891); Frivaldsky, Av. Hung. p. 72 (1891); Brusina, Orn. Jahrb. ii. p. 16 (1891); Sharpe, Sci. Res. Second Yark. Miss., Aves, p. 67 (1891); Saunders, Ibis, 1891, p. 169; Dresser, t. c. p. 367; Rose Monteiro, Delagoa Bay, p. 47 (1891); Reiser, Vogels. Landesm. Sarajevo, p. 23 (1891); Seebohm, Ibis, 1892, p. 19; Rendall, t. c. p. 215; Barnes, Ibis, 1893, p. 68; Blagg, t. c. 1893, p. 352; Sharpe, Ibis, 1893, p. 561.

Chimney-Swallow, Lath. Gen. Syn. ii. pt. 2, p. 561 (1783).

Hirundo domestica, Pall. Zoogr. Rosso-Asiat. i. p. 528 (pt., 1811); Swinh. Ibis, 1864, pp. 414, 420; Wyatt, Ibis, 1870, p. 10; Severtz. Turkest. Jevotn. p. 67 (1873).

Chelidon progne, Forst. Syn. Cat. Brit. B. p. 55 (1817).

Cecropis rustica, Boie, Isis, 1826, p. 971, et 1844, p. 174; Less. Compl. Buff. viii. p. 498 (1837).

Cecropis pagorum, C. L. Brehm, Vög. Deutschl. p. 138 (1831); id. Naum. 1855, p. 271.

Cecropis stabulorum, Brehm, Naum. 1855, p. 271.

Hirundo cahirica (nec Licht.), Hartl. Orn. W.-Afr. p. 26 (1857); Cass. Proc. Acad. N. Sci. Philad. 1859, p. 23; Blasius, Naum. 1859, p. 254; Hartl. J. f. O. 1861, p. 103; Tristr. Ibis, 1862, p. 278; Gurney, Ibis, 1866, p. 423; Tristr. Ibis, 1867, p. 361; Loche, Expl. Sci. Algér., Ois. ii. p. 67 (1867); Saunders, Ibis, 1869, p. 396; Salvad. Ibis, 1870, p. 153; Saunders, t. c. p. 299; Elwes & Buckley, t. c. p. 200; Godwin-Austen, J. A. S. Beng. 1874, p. 152.

Hirundo boissoneauti (nec Temm.), Linderm. Vög. Griechenl. p. 119 (1860); Krüper, J. f. O. 1860, p. 281.

Hirundo savignii (nec Aud.), Tristr. Ibis, 1864, p. 230; Salvad. Elenco, p. 82 (1887); Gigl. 1° Resoc. Avif. Ital. iii. p. 512 (1891).

Hirundo rustica orientalis (nec Schl.), Wright, Ibis, 1864, p. 57.

Hirundo riocouri (nec Aud.), Gurney, jun., Ibis, 1866, p. 423.

Chelidon rustica, Stejn. Pr. U. S. Nat. Mus. vi. p. 31 (1882).

Hirundo rustica pagorum, Brusina, Orn. Croat. p. 58 (1890); Reiser, Vogels. Landesm. Sarajevo, p. 23 (1891); Brusina, Orn. Jahrb. ii. p. 16 (1891).

Adult male in breeding plumage. General colour above glossy purplish blue, the mantle slightly varied with white bases to the feathers; on the sides of the lower back a tuft of silky-white plumes, some of which are edged with black; lesser and median wing-coverts like the back; greater coverts, bastard-wing, primary-coverts, and quills black, externally glossed with purplish blue, with somewhat of a steel-green appearance on some of the feathers; tail-feathers blackish, washed with steel-green, all but the centre feathers with a large rounded spot of creamy white on the inner web, becoming longer and more oblique on the outer feathers; head like the back, the nape varied with white bases to the feathers; forehead deep rufous; lores deep black; ear-coverts and feathers below the eye purplish blue; cheeks and throat deep rufous, separated from the breast by a broad collar of glossy purplish blue, slightly interspersed with a few rufous bars on the centre of the collar; fore neck and remainder of under surface pale rufous buff, a little deeper on the vent and under tail-coverts, the longest of the latter with a terminal spot of black, represented on some of the others by a blackish shaft-line; axillaries and under wing-coverts like the breast, the former a little deeper in colour; quills blackish below: bill black; feet black; iris dark brown. Total length 7·3 inches, culmen 0·35, wing 5·05, tail 4, tarsus 0·5.

Adult female. Very similar to the male in colour, and having, when old, the same rufescent tint on the breast, but generally rather paler below, and having a somewhat shorter tail. Total length 6·6 inches, culmen 0·35, wing 4·65, tail 3·3, tarsus 0·5.

Nestling. More dusky than the adults, and not so glossy nor so purple; rufous frontal mark very small; cheeks and throat dark rufous; remainder of under surface clear rufescent, separated from the throat by a broad black band washed with rufous.

In the full-grown young bird the outer tail-feathers have greyish-white edges to the outer webs, and there are light rufescent margins to the feathers of the lower rump and upper tail-coverts.

It is somewhat curious that the nesting birds approach the very old birds in their coloration, being not only of a pronounced rufescent colour underneath, but also having some of the feathers of the black collar edged with rufous.

On leaving the nest, especially those birds of the first brood, the young Swallows lose this rufescent tint rather quickly and become bleached, the forehead turning to white with exposure, and the throat fading to a pale tawny buff. The upper surface of the body becomes gradually browner and loses the blue altogether.

This change of plumage generally takes place after the birds have left England; but we have seen one specimen, killed at the end of August, which had begun to assume its new plumage on the throat, putting on the bright rufous throat of the second season. The forehead is bleached to white. These changes generally take place during the Swallow's sojourn in its winter home, in the months of January and February, and it is very rare to see a commencement of the change in England.

The change of plumage and the process of the winter moult have been fully described in the 'Proceedings' of the Zoological Society for 1870. The Common Swallow arrives in its winter home in the same plumage in which it left in the previous spring, and, of course, by the time that it reaches its winter habitat the bird's feathers are bleached and worn out. The rufous of the forehead and throat becomes nearly white, and the beautiful blue colour of the back turns to a dingy brown, while the wings are rusty brown. Mr. Seebohm well describes the

worn-out plumage of the Swallow as he saw it in Natal:—"Our Swallow, as probably every other species of Hirundinidæ, only moults once in the year. After having migrated six or seven thousand miles to their breeding-grounds, spent nearly six months in the stormy summer of Northern Europe, again migrated six or seven thousand miles back to their winter-quarters, and spent another six months during the rainy season of Natal, it is a wonder that the poor birds have any feathers left. Some of those which I shot had been in a lamentable condition; the old feathers that still remained had faded to a rusty brown and were worn to shreds. The plumage of the young birds, though they had only run the gauntlet of one journey and one summer, is so much more tender than that of adults, that they were in the worst condition; the old feathers were no better than rusty rags."

In the 'Catalogue of Birds,' Dr. Sharpe has expressed his views with regard to *Hirundo rustica* and the allied species, and during the eight years which have elapsed since the issue of that work, we find no reason to modify the conclusions therein expressed. Since the year when the tenth volume of the 'Catalogue' was published, the British Museum has, through the generosity of Mr. Allan Hume, Messrs. Osbert Salvin and F. D. Godman, and Major Wardlaw Ramsay, become the possessor of the great Hume, Salvin-Godman, and Tweeddale collections, so that the material which we have been able to compare has been increased nearly tenfold, and yet we adhere in the main to the conclusions which the 'Catalogue' professes.

Taking, therefore, *H. rustica* as the dominant species, it is evident from the series in the British Museum that the intermediate gradation between that species and its near allies is complete, and the treatment of *H. gutturalis*, *H. savignii*, *H. erythrogastra*, and *H. tytleri* as subspecies of *H. rustica* is fully justified. Thus between *H. rustica* and *H. gutturalis* every kind of intermediate specimen can be found, and the purely western birds are often as intermediate as those found in the far East. In the Swallows, in fact, we see a repetition of the curious phenomenon, recorded by Dr. Sharpe, with regard to the Starlings, *Sturnus vulgaris* and *S. menzbieri* (Cat. B. xiii. p. 29), in which the strain of the eastern bird has strongly impregnated the western and typical form, so that two thoroughly distinct species possess an intermediate link which lessens the status of both of them. Here we have a justification of the recognizable, but clumsy, American system of trinomial names to express a certain fact in nature.

Many ornithologists have recorded the occurrence of *H. savignii* in various countries of Europe. This is a mistake. *H. savignii* is a resident form of *H. rustica*, apparently confined to Egypt. Having ourselves seen the birds in that country, we can confidently assert that there is no certainty of distinguishing *H. savignii* on the wing from a spring-plumaged specimen of *H. rustica*, unless the eye be accustomed to the dark under surface of the Egyptian bird. The supposed occurrence of the Egyptian Swallow in various countries of Europe, including England, is based on error of observation, and the bird which does duty for *H. savignii* in these records, and is spoken of by many of our colleagues as *H. savignii* or *H. pagorum*, is nothing but the ordinary *H. rustica* in beautiful spring plumage. We owe to the kindness of an old friend, Mr. Henry Whitely, of Woolwich, a specimen shot on the Plumstead Marshes in May, which is by far the nearest approach to *H. savignii* of any Swallow which we have yet seen from Great Britain. Dr. Giglioli has endorsed our opinion with regard to Italian and Sicilian records.

Everything seems to prove that it is only the very old birds that have the rufescent breast in spring, for we have before us several males killed in spring-time, which are very pale underneath and have perfectly defined black collars on their throats, whereas in the rufous-breasted specimens the centre of the black collar has rufous bars which break the continuity of the black collar, the

latter being always more perfect in the whiter-breasted birds. The rufous mottling of the collar may therefore be a sign of breeding-plumage in certain of the western birds, or it may be the result of interbreeding with one of the darker eastern forms—a supposition which is founded on great probability.

As regards the respective ranges of *Hirundo rustica* and *H. gutturalis*, we propose to supplement the remarks made in the 'Catalogue of Birds' by a detailed list of the specimens now in the British Museum, and it will thus be seen how completely the ranges of the two races overlap. In the subjoined paragraphs we have given the localities of the two races, as recorded by competent writers. It is obviously impossible for us to examine specimens from every country, but many of the specimens referred to *H. rustica* or *H. gutturalis* in the mass of records of these two species must belong to the intermediate form.

Regarding the ordinary European *Hirundo rustica* as the typical form, it concerns our present purpose only to give a list of specimens from localities where the two species may be expected to overlap in habitat. The following, therefore, are extra-European localities for typical *H. rustica* in the collection of the British Museum:—Fao; Bushire; Yarkand; Kandahar; Gulran; Khelat; Cashmere; Gilgit; Almora; Sambhur; Etawah; Deesa; Saugor; Khandeish; Deccan; Ahmednuggur; Ceylon; Maunbhum; Calcutta; Nepal; Sikhim; Native Sikhim; Oudh; Behar; Dibrughur; Shillong; Kamroop; Cachar; Manipur; Elephant Point; Tonghoo; Lower Pegu; Moulmein; Thatone; Mooleyit; Thoungyeen Valley; Amherst; Mergui; Khyketo; Mt. Harriet, S. Andamans; Great Cocos Isl.; Java; Manila; Mindanao; Kina Balu; Celebes; Batchian; Shanghai; Amoy.

The specimens which may be referred to typical *H. gutturalis* are from the following localities:—Rajkote in Kathiawar; Kamptee; Mhow; Maunbhum; Dibrughur; Shillong; Sadhyia; Sylhet; Manipur; Elephant Point; Tonghoo; Pegu; Mooleyit; Houngthraw River; Khyketo; Bopyin; Moulmein; Amherst; Tavoy; Malewoon; Mt. Harriet, Andamans; Malacca; Klang, Selangore; Singapore Island; Johore; Gulf of Siam; Sumatra (*C. Bock*); Java; Labuan; Baram (*C. Hose*); San Mateo, Luzon; Celebes; Batchian; Halmahéra; Bourou (*H. O. Forbes*); Amboina (*H. O. Forbes*); Amoy; Canton; Formosa; Japan.

Birds with a strong rufescent tinge on the under surface, showing an approach to *H. savignii* or *H. tytleri*, are from the following localities:—England; Hungary; Asia Minor; Accra, W. Africa; S. Africa; Etawah. All these would be called *H. pagorum* by recent advocates of that subspecies.

Intermediate specimens between *H. rustica* and its ally *H. gutturalis* are from the following places:—Cyprus; Mekran coast; Gilgit; Dhurmsala; Sehwan; Raipur; Madras; Cotta, Ceylon; Maunbhum; Calcutta; Dinapur; Mynpuri; Sikhim; Darjiling; Shillong; Kamroop; Manipur; Bhamo; Pegu; Bopyin; Tavoy; Kaukaryit; Moulmein; Amherst; Malewoon; Andamans; Klang, Selangore; Penang; Pulo Seban; Malacca; Singapore; Java; San Mateo, Luzon; Manila; Celebes; Amoy; Vladiowstock.

Specimens from Etawah, Manipur, and Singapore Island appear to us to be intermediate between *H. gutturalis* and *H. tytleri*, and between the latter bird and *H. rustica* are specimens from Gurgaon, Dacca, and Tavoy.

Mr. Hume, writing in 1888, on the birds of Manipur, observes:—"The Sylhet male, the finest bird out of a large flock, is undoubtedly *H. gutturalis*, but the Manipur birds ought, I think, to stand as *H. rustica*." He then gives measurements, and concludes:—"I have dealt in detail with these two races in 'Stray Feathers,' vol. vi. p. 41, and can only repeat my doubts

as to the propriety of specifically separating these two races, which so perfectly blend into each other throughout the major portion of this empire." It will be seen by the list of specimens recorded above how truly apposite were the remarks of the great Indian ornithologist, and an examination of the series of specimens preserved in the Hume collection amply confirms his observations. At the same time, if *H. rustica* and *H. gutturalis* are to be united, so must all the other Swallows of the group also be, for many examples of *H. rustica* approach *H. cahirica* in Europe and *H. tytleri* in India, and between these races and *H. erythrogastra* there is a further link, so that all the Barn-Swallows are really connected together. We believe that these results are due to interbreeding, just as is the case with Dippers (*Cinclus*) and Wagtails (*Motacilla*).

Hab. Europe generally, wintering in Africa. Western Asia, as far as the Valley of the Yenesei, and probably further to the eastward, certainly in Central Asia and the Himalayas. Wintering in the Indian Peninsula and in various parts of the Indo-Burmese sub-region, Java, the Philippines, Borneo, and Celebes, even occurring in the Moluccas. Occasionally met with in China, probably on migration only.

The Common Swallow is abundantly dispersed over Europe in summer, at which season it visits the greater part of the Palæarctic Region. It breeds throughout the British Isles, but is rarer in the north, and, according to Mr. Howard Saunders, it decreases in the north-west. It doubtless breeds in most of the Hebrides. Mr. Robert Gray writes, in his book on the 'Birds of the West of Scotland':—"Is a well-known summer visitant over the whole of Western Scotland, extending to both groups of Islands. It does not appear to remain to breed in the Outer Hebrides, but specimens are seen there every year. I have observed it in N. Uist, Benbecula, and S. Uist . . . . . In the Inner Hebrides its stay extends over the summer; it is common in Mull and Iona, in Skye, Rum, Tyree, Coll, and probably all the smaller isles."

Mr. Dixon, in his paper on the Birds of St. Kilda, writes:—"Mr. Mackenzie informs me that he saw numbers of Swallows on St. Kilda in 1883, but never observed them there before. I never saw the Swallow during my stay. It never breeds on St. Kilda."

With regard to the Orkney Islands, Messrs. Buckley and Harvie-Brown state that it is plentiful, and has very much increased in numbers of late years, owing, in Ardnamurchan at least, according to Dalgleish, to the erection of a number of farm-houses.

Dr. Saxby says:—"In Shetland this welcome bird comes in autumn and spring, though in very small numbers. In June, 1867, I knew of a nest and eggs in a byre-roof at Petista, in Unst, and have heard of a few other well-authenticated instances of its breeding in Shetland; but such instances are very rare. Notwithstanding the bright sunshine of autumn, the Swallows seem but ill at ease when they pay a visit at that season, sitting among the shrubs or upon the house-roof; and when they do venture upon a short flight, they perform it in a listless manner, and very soon return to their

former station." A recent note by Mr. Blagg states that he observed the species on Bressay, May 27th, also at Sand Lodge on June 6th.

In Ireland, according to Mr. Thompson, it is "abundant in summer; much more so than the other species of the family. It arrives the second in order of the Swallows, being preceded by the Sand-Martin. The earliest appearance of the Swallow that I have known about Belfast was in 1846, when, on the 30th of March, two birds exhibiting the long tail-feathers which denote *H. rustica* were seen flying on the bay. On the next day a single bird was observed on each side of its shores. On the 6th of April a Swallow was observed between Antrim and Ballymena. But, though individuals arrived so early that year, those which followed to complete the summer number were remarkably late in coming."

In the Færoes, according to Colonel Feilden, it appears in considerable numbers in May, but has never been observed nesting there. To Iceland it is also a rare straggler, and never remains to breed.

As regards the occurrence of the species in Scandinavia, Professor Robert Collett, writing to Mr. Dresser, says that it breeds throughout Norway up to about the Arctic Circle, above which it is seen as a straggler, but does not appear to breed. Mr. Dresser, in his 'Birds of Europe,' summarizes the Swedish records of the Swallow as follows:—"In Sweden it is a common summer visitant, arriving about the 22nd or 26th of April and sometimes not till early in May, and leaving early in October. It breeds commonly throughout the country, and is found as far north as Alten in 70° N. lat., and at Vardö in 70½° N., but does not breed there. It is also said to have been seen at Hammerfest. South of these places, Prof. Sundevall says it is not found in Lapland until about 68½°, at Enontekis, Karesuando, and Iwalajoki, below which it is extremely common."

In Spitzbergen, according to Professor Newton, it was noticed by Mr. Campbell; and the late Mr. George Gillett states that on his way to Nova Zembla a pair was seen flying round the ship as she lay at anchor in a small bay (lat. 70° 10′ N.), but no others were seen. In the Kola Peninsula, Dr. Pleske states that the Common Swallow is a regular breeder in the southern portion of the district in small numbers; in the northern part it nests only occasionally, and sometimes appears in pairs in the spring, but these appear to retire to the southern portions to breed. In Finnish Lapland its appearance is very rare, as Professor Palmén observed it only at Muonioniska. Professor Malm records the breeding of the Swallow in the Enare district as far as Kyre and Iwalajoki. In every locality, however, it is rare. Dr. Pleske continues:—"With regard to its occurrence in East Finmark, Schrader saw a single bird on the Varangerfjord on the 17th of May, 1849, but makes no observation as to the breeding of the species in that district. Sundevall records it from Vardö, and Esmark found it breeding near Svanevig on the Pasvig River." It has been recorded by Nordvi as breeding in Vadsö. During his visit to Lapland Mr. A. C. Chapman observed the Swallow in Gulholmen on June the 10th and near Pulmak on the 18th of the same month. Dr. Pleske states

that, according to Mr. Enwald's notes, it does not visit Russian Lapland or Kemi-Lappmark and was not observed by him at all during 1882 and 1883. Nikolski remarks on its very rare occurrence on the Varangerfjord. Mela informs Dr. Pleske in a letter that he noticed it in Soukelo. In Archangel Mr. Seebohm found the Barn-Swallow a common summer visitor, and throughout Finland it is plentifully distributed.

Everywhere throughout Germany, Denmark, the Low Countries, and France the Common Swallow is a regular visitor in summer. In the south of Europe it arrives much earlier than in the north. Mr. Howard Saunders observed the first birds at Lausanne, in Switzerland, on the 6th of April, but he heard of its arrival at Ouchy some days earlier. He says it was seldom seen as high up as Chaumont, and was never seen breeding there. In the Pyrenees the same observer noticed the Swallow at St. Jean-de-Luz on the 23rd of March; Colonel Irby found it very abundant at Santander; and Mr. Eagle Clarke, in his notes on the birds of the Eastern Pyrenees, states that it was abundant about Tarascon, Aix, and in the upper valley of the Ariège to above Hospitalet, at an elevation of 5000 feet; it was also common at Perpignan.

With regard to its occurrence in Southern Spain, Mr. Howard Saunders writes:—"I was informed that the usual date of the appearance of the Swallow at Malaga was the 25th of January; but I did not actually observe it till 4th February, 1868 (an exceptionally cold year). I found many broods hatched by April 16th in the herdsmen's huts south of Seville. Amongst the tens of thousands of Swallows that have crossed my eye in Andalucia, where they swarm to a degree unknown in England, I never observed one with the faintest approach to that rufous or buffy tinge on the abdomen so noticeable amongst our new arrivals here, a tint which is lost as the season advances, as I have remarked in a pair which bred in my porch at Reigate year after year."

Colonel Irby observes:—"About Gibraltar the Swallow generally arrives about the 13th of February, although I have occasionally seen a straggler in December and January. I have seen them crossing the Straits in considerable numbers up to the 15th of April; the latest I noticed were passing on the 24th of that month. I have observed the nest finished on the 23rd of February, and young birds able to fly on the 24th of May."

In Portugal, according to Mr. Tait, it "usually arrives at Oporto between the 8th and 15th of March, but sometimes a stray individual or two may be seen at the end of February, and I once saw some as early as the 13th of January, 1878. In the south of Portugal they arrive in February. The departure southwards from the neighbourhood of Oporto generally takes place from the middle of September to the middle of October, but some remain for a few days, or even weeks, longer. I saw one as late as November 20th; in fact, December is the only month in which I have not seen them in this country. In the province of the Douro this Swallow nests in the subterranean galleries which are cut into the hill-side to obtain water—a rather unexpected situation for Swallows to choose. Dr. Carvalho has furnished me with a table of observations

respecting the Swallow as observed by him at Coimbra during the last fifteen years, showing that the average date for arrival is the 10th February, and for departure the 13th October."

In Tangier Mr. Favier states that it breeds, and in autumn numbers of migrants join the resident birds and all depart for their winter home. The spring migration takes place in January and February, when great flights pass northward. Mr. Tyrwhitt Drake records the Swallow as occurring all the year round in Tangier and Eastern Morocco; but this, as will be seen, is not Favier's opinion. In Algeria, according to Loche, it is a spring and autumn migrant principally, but also breeds in the country. In the Province of Constantine, Mr. Dixon records the species as one of the most widely spread of Algerian birds, and quite as late a breeder as the House-Martin.

Captain Reid states that during his visit to Teneriffe he noticed the first appearance of the Swallow at Buena Vista on the 26th of February, and when Mr. Meade-Waldo visited the Canary Islands he found the Common Swallow in thousands. In the Azores Mr. Godman says it is an occasional visitant, and Mr. Salvin states that on the 28th of May some Swallows came on board the ship about 180 miles to the eastward of the above-named islands.

In Corsica, Mr. John Whitehead says that the Swallow breeds abundantly. He saw it first on the 16th of March, and noticed a few going south on the 16th of November. Mr. Basil Brooke observed the species in Sardinia, and writes:—"Arrives in small numbers about the end of February or early in March, from which time they keep gradually increasing in numbers. Young birds were hatched about the 9th of April." Mr. C. Wright gives the following note:—"Arrives in Malta in great numbers early in March, and may be seen in town and country till May. At the end of August on its return southward it again makes its appearance, and is plentifully spread over the island till October."

The Swallow is found everywhere in Italy and Sicily. Count Salvadori says it is a very common summer resident, arriving in March and April and leaving in September and October. Professor Giglioli remarks on the curious way in which the bird is absent in certain parts of Italy and Sicily. Thus Professor Doderlein found very few nesting near Palermo, and Dr. Giglioli himself has observed the same thing at Naples. He attributes the fact to the construction of the houses in Central Italy, which afford no sheltering eaves for the nesting of the species.

In Greece it is a summer visitor, breeding throughout the country in small numbers. Professor Brusina states that it is found in Cattaro and Montenegro generally, but it was not observed at Cetinje. Messrs. Elwes and Buckley found the species everywhere common in Turkey, and Lord Lilford says that it is exceedingly abundant in Cyprus. Dr. Guillemard saw the first in 1887 on the 24th of February, and in 1888 on the 13th of the same month.

The Swallow of Palestine has generally been considered to be *H. savignii*, the resident species of Egypt. In the British Museum are three specimens collected by Canon

Tristram in Palestine, and these are not the true *H. cahirica* or *H. savignii* of Egypt, but a richly coloured form of *H. rustica*. Whether the dark colour of the Palestine bird is due to interbreeding with *H. savignii* it is difficult to prove; and as Canon Tristram speaks of the bird as resident in the country the whole year, it may well be that *H. cahirica* was the original inhabitant of the country, and has become modified into an intermediate race by interbreeding with individuals of *H. rustica*, which settle in the country on its return from its winter-quarters. We give Canon Tristram's note in its entirety, merely recording our opinion that the bird referred to is *not* the "Oriental Chimney-Swallow," but only a dark form of *H. rustica*, which we are prepared to match any day by English specimens. Canon Tristram writes as follows:—"The Chimney-Swallow remains the whole year, and is found both on the coast (in the maritime plains) and throughout the length of the Jordan Valley. No one can observe this bird in the Holy Land without being satisfied of its distinctness from *H. rustica*. It is true we can give no other diagnosis than the difference of coloration on the lower parts, these being chestnut instead of white or brownish white; but of the hundreds of Swallows of both sexes to be seen throughout the winter, not one of the common sort could be detected. There is neither fading nor intensifying of the chestnut lower plumage at any time of the year. Specimens shot at all seasons are precisely similar. In spring their numbers rapidly increase, and from the middle of March they become distributed over the whole country, the higher as well as the lower grounds, while along with them appear many of our common species. In the higher grounds these, perhaps, predominate; in the lower certainly the *H. cahirica* is most numerous. I never could detect the two sorts interbreeding, though the nest and eggs are precisely similar. Having no chimneys provided for them, rafters of outhouses, where such can be found, but especially ledges in caves, are the favourite nesting-places; and I took five nests of the *H. cahirica* attached to little projecting stones under the vaulted roof of a well in constant use, about two feet from the ground, and built in a row. Convenient situations must have been scarce there (it was near Kedesh); for we had to stoop under the roof to draw water, and almost touched the nests with our heads as we withdrew."

In Southern Russia, according to von Nordmann, the Swallow appears as early as the 8th of April, and he considers that the time of arrival in Southern Russia is at least from 16 to 20 days in advance of their advent at St. Petersburg. He believes that on migration they do not follow the coasts, but fly across the Black Sea. Near Odessa he has seen stragglers as late as the end of October.

Dr. Radde states that it is a common summer resident in the Caucasus as high as 4000 feet, but is not so plentiful as in other parts of Europe. In Astrakhan it was found by Mr. Henke to be a very common summer visitor, especially in the steppes.

Mr. Blanford says that the Swallow was "common throughout Persia in the summer, and breeds at heights from about 4000 feet to about 8000. At Kalagán and Jalk the birds appeared to be arriving in March, and on dissection it was evident that they were commencing to breed."

Mr. Cumming has sent specimens from Fao in the Persian Gulf, and Mr. Palmer from Bushire. The former gentleman states that the species breeds in the huts and telegraph-buildings, in March and April, and he believes that it only leaves Fao in mid-winter—that is, in December and January.

With regard to its occurrence in Turkestan, Dr. Severtzoff states that it is found breeding throughout the country. Dr. Pleske records the species from Tschinas in Central Asia, where it was obtained with its nest and eggs by the late Mr. Russow on the 21st and 22nd of April. He also observed it near Tschiraktschi in the Western Tianshan. During the Forsyth Mission to Yarkand, Dr. Stoliczka noticed the Common Swallow as very common about Sarikol in May. He found it breeding at Yarkand in the same month. Dr. Scully observes that it is "found in great numbers in the plains of Eastern Turkestan, from Sanju to Kashgar, for six months in the year. The birds arrive about the middle of April, and migrate towards the end of October, not a single bird of this species being ever seen in winter. They breed during May and June; many young birds, just able to fly, being found in the early part of July. The Yarkandis call the bird 'Uï Karlo-ghach'—'House Swallow,' and say that it always makes a mud nest on the roofs of houses, the number of eggs laid being from three to five, and that two broods are reared in the season. Unlike the Swift, this species was frequently seen perching on trees, and settling on the ground and on sand-banks."

The late Dr. Severtzoff, in his notes on the birds of the Pamir range, writes as follows:—"Swallows appear towards the end of August and pass through uninterruptedly till the end of September. When the weather on the Pamir is bad Swallows return to Gulcha along the Kurshab river, and flying over the mountain-passes, appear on the roads near Osh in Ferghana. Probably these are young birds seeking the way to their winter-quarters. One of these birds flew into a traveller's sledge in the Zaalai chain in the middle of September, 1878. It followed his baggage-train daily, and at night sought shelter in the sledge, as far as the Taldit pass. Three others joined it *en route*."

Dr. Finsch noticed the species on Lake Ala-kul on the 7th of May and also at Berezoff. Mr. Seebohm in his account of his Siberian expedition writes as follows:—"On the 16th May a solitary Barn-Swallow appeared, and I did not see another until we were within a hundred miles of Yene-saisk on the return journey. At that town they were common enough."

In the introduction to the present article, we have given a list of specimens of true *H. rustica* in the Hume collection and that of the British Museum; this affords a thorough indication of the range of the Common Swallow in the Indian Region. The following notes refer, we believe, to the European bird.

In Afghanistan, writes Colonel Swinhoe, it is "common everywhere during summer. I saw the first Swallow in Kandahar on the 29th January; and five days afterwards one flew into my room, which proved to be a male with testes enormously swollen. In another week they were with us in thousands, making nests in every convenient spot available; one pair built and reared their young inside one of the mess tents, which was in constant use. The number of these little birds in the city was very remarkable."

Lieut. H. E. Barnes found the species breeding at Chaman in Southern Afghanistan, but not in such numbers as at Kandahar. The late Sir Oliver St. John observes :—" First seen in Kandahar in 1879 on the 7th February. Disappeared entirely before the end of September, very few indeed remaining after the middle of August." Colonel Swinhoe notes that he saw the first Swallow in 1881 on the 29th January. In Quetta they are later in appearing.

Major Yate procured specimens in the Badgis district, Herat, on the 12th of April, and Dr. Aitchison at Gulran. Major Wardlaw Ramsay noticed the species in the Kurrum Valley.

By Dr. Henderson the Common Swallow was found in great abundance in Cashmere, in June, where it was breeding. Colonel Biddulph says that in Gilgit it was seen at intervals all through the summer. The earliest date at which any Swallows were noticed was the 14th of March, and all the specimens obtained by him and Dr. Scully appeared to be true *H. rustica*. This applies to most of their specimens, but we consider one or two to be intermediate. Mr. Brooks states that it was frequently seen by him between Masuri and Gangaotri, as it was at all the hill stations. He inclines to the belief that the Masuri bird is not true *H. rustica*; but we are not able to decide this question, as there are no Masuri specimens in the Hume collection, but an Almorah bird in the latter is typical *H. rustica*. In his paper on the birds of Chamba, Colonel C. H. T. Marshall writes:—"They arrive in the spring in numbers, frequently as early as February 1st, and stay here till the autumn. A nest may be found in every third or fourth house during April and May. A Swallow's nest in the house is looked upon as a good omen by the householder." Mr. Hume found it "more or less abundant in suitable localities throughout Sindh from Kussmore to Kurrachee." A specimen from Sehwan, in the Hume collection, is considered by us to be intermediate between *H. rustica* and *H. gutturalis*. Throughout Cutch, Kathiawar, and Gujerat, the Swallow is said by Colonel Butler to be a cold-weather visitant. The only specimen collected by Major Hayes Lloyd at Rajkote, in Kathiawar, appears to us to be true *H. gutturalis*. Colonel Butler states that in the neighbourhood of Mount Aboo and in Northern Gujerat the present species is common in the plains during the cold weather, arriving about the 1st of August, and leaving towards the end of February. Mr. Hume states that Dr. King never obtained it on Mount Aboo and it does not apparently ascend the hill. He also says that many of the specimens from the above-mentioned region may be referred to *H. gutturalis*, but that Colonel Butler's specimens from Deesa were undoubtedly true *H. rustica*; this is confirmed by a specimen from Deesa in the Hume collection.

From Nepal we have seen nothing but the true *H. rustica*. Dr. Scully writes :—"The Common Swallow is found in abundance in the valley of Nepal during seven months in the year. It arrives about the middle of February, and migrates to the plains about the middle of September. The earliest date on which I noticed it in the valley was on the 8th of February, and the latest on the 13th of September. During the winter it was very common in the Terai and plains of Nepal. This Swallow breeds

freely about the valley in April and May; young birds, just able to fly, are often seen about the middle of June."

From Native Sikhim also we have only seen true *H. rustica*, but in Sikhim not only the latter bird, but intermediate specimens have been procured, and the same may be said of Assam, Sylhet, Manipur, Pegu, Tenasserim, and the Andamans. To all these countries the typical *H. gutturalis* is also a winter visitor. The birds which Colonel Godwin-Austen recorded as *H. cahirica* breeding near Imphal, the capital of Manipur, in February and March, are *H. rustica*, as we have determined by an examination of the specimens kindly lent to us by Colonel Godwin-Austen.

In his paper on the birds of the Lucknow Civil division Mr. George Reid writes:—"Abundant during the cold season, making its appearance in October and departing at the commencement of the hot weather. A few stragglers may even be found in the early part of May. Here, however, it is never the household pet that it is in England, frequenting for the most part open country, especially in the vicinity of jheels, and it is not unfrequently found skimming over water in vast numbers. It sometimes perches on the bare branches of trees and in some localities probably spends the night on them. It also frequents the telegraph-wires, but has not, that I know of, any liking for native villages, though in towns it gets attached to mosques, minarets, and old buildings, about which many may always be found."

Colonel Swinhoe and Lieut. Barnes state that it is common near Mhow during the cold season, appearing about the middle of March and leaving towards the end of February. Their specimens are determined by us to be *H. gutturalis*. The specimens in the Hume collection from Raipur appear to belong to the intermediate form, but true *H. rustica* occurs near Etawah, Saugor, in Kandeish, the Deccan, and Ahmednuggur, but *H. gutturalis* also visits the same localities, as we have examined specimens from Kamptee and Mhow. Professor Valentine Ball records Swallows from the following localities:—"Midnapur, Manbhum, Lohardugga, Sirguja, Sambalpur, north of Mahanadi; Nowagarh and Karial; Godaveri Valley."

In Western Khandeish Mr. Davidson says that the Swallows are common cold-weather visitants but local, and the same is said of the whole Deccan. They were common near Khandala, according to the Rev. S. B. Fairbank. Mr. Vidal says that they came to Ratnagiri in large numbers in November 1879. Swallows are found throughout Mysore and the Wynaad as well as in the Nilghiris, but probably do not ascend the hills to any great elevation, according to Mr. Hume, who noticed several at the foot of the Coonoor Ghât.

With regard to the Swallow in the island of Ceylon, Colonel Legge writes:—"It arrives usually in the north of the island about the second or third week in September, the young birds coming in first. The period of its arrival is, however, somewhat irregular, and perhaps depends upon the break up of the south-west monsoon to some extent. Its numbers are increased considerably in about a fortnight after its first appearance, and it then begins to spread southward, but does not do so always as regularly as might be expected. Mr. Parker has observed it at Puttalam as early as the 20th September one year, when my earliest date noted down at Colombo was

not till after the 1st of October. At other times I have seen it at Colombo in the middle of September, and I observed it at Galle in 1872 on the 15th of that month. It inhabits the whole of the low country, and likewise ascends into the hill districts to a considerable elevation, but does not inhabit the higher regions in any abundance. It leaves the island completely about the second week in April, quitting the southern districts a week or two prior to that date. It is, I think, commoner on the west coast than on the east." Mr. Parker also gives the following note from Ceylon:—"Arrives at Tissa from Aug. 30 to Sept. 12th, and leaves at the end of April. These Swallows sleep in immense numbers in the bulrushes there, arriving in flocks before dusk. Before returning, they amuse themselves by rapid evolutions, high and low, in the air, sometimes flying in a wide continuous band or ring over their sleeping-quarters. As it grows dusk they suddenly drop into the rushes. Probably they come from great distances; very few are visible in the neighbourhood during the day."

The curious phenomenon of the migration of the Swallows in the island is thus chronicled by Mr. Bligh:—"At a rest-house about ten miles from Coslanda, where I was detained on account of a ford being impassable, I was attracted by seeing several Wagtails, *M. melanope*, on the top of a low bazaar building. Swallows then began to arrive in flocks and commenced sweeping round over a small garden of native coffee. I called the rest-house keeper's attention to the birds and he told me that they came there all the last cold season to roost in the coffee. The rest-house keeper sent a boy to frighten up those that had settled; they went up in a cloud and the rustling of their tiny wings was distinctly heard by me a hundred yards off; they rose in a cupola-shaped mass, and were as thick as bees in a swarm; there must have been 30,000 or 40,000 birds on the wing at that moment, the Wagtails forming, as I estimated, about a third or fourth of that number. The boy was called away, and soon all the birds descended before it was quite dark; when settled, the Swallows kept up an incessant simmering chirping for some time. The sight was a wonderful one; at daylight the birds all departed very quickly and quietly."

From the British Museum collection it would seem that true *Hirundo rustica* and the intermediate form both reach Ceylon, but we have never seen a specimen of true *H. gutturalis* from that island.

Mr. Davison says:—"This bird is common both at the Andamans and Nicobars; during the day it may be found hawking slowly about some shady spot, or sitting, several together, on some dry branch or house-top. Now and again one will start off, take a short irresolute flight and return to its perch: sometimes when one starts off, it is followed by others in rapid succession; at others all start off simultaneously, and after taking a more or less extended flight, return, each twittering as it alights. I have not found it breeding either at the Andamans or Nicobars, but I think it must do so, as I found them as numerous as ever they were as late as May." The specimens in the Hume collection show that not only *H. rustica* and *H. gutturalis* visit the islands, but the intermediate form is found there also.

In Mr. Oates's edition of Mr. Hume's 'Nests and Eggs of Indian Birds' are given

the following notes on the breeding-range of the Swallow in India, and we believe that in every case the true *H. rustica* is intended:—"A few of the Common Swallows breed during April and May along the whole line of the Himalayas, from Cabool to Assam, at heights of from 4000 to 7000 feet. Rarely more than one or two pairs are found, as far as my experience goes, breeding in the same immediate neighbourhood anywhere to the eastward of Cashmere, and, indeed, eastwards of this happy valley it is only here and there that they are met with. I myself have only seen them breeding near Dhurumsala, at two or three bungalows between Sooltanpoor in Kooloo and Simla, and at Simla itself. Capt. Cock first pointed out to me that they bred near Dhurumsala, where he procured their eggs. From Murree I have received a nest, eggs, and both parents; from Almorah a single egg. Mr. Masson tells me he once noticed a pair building near Darjeeling. . . . . In Cashmere they breed more numerously, from all I can learn, than in any other part of the Himalayas. In Candahar, as Capt. Hutton tells us, they breed abundantly. On the whole, it would appear that, while a comparatively small number breed here and there everywhere along the southern face of the Himalayas, the great majority of the vast numbers that during the cold season throng the neighbourhoods of our jheels and ponds seek Cashmere and other more westerly localities to rear their young.

"The nests that I have seen resembled much those of the Wire-tailed Swallow, but were deeper and had the pellets of which they were composed larger and a good deal mingled with grass &c. The nest sent me from Murree is a very perfect, rather deep, half-saucer; two that I found containing young ones, fixed in the corners of verandahs, were mere quarters of very wide and shallow dishes; another, in a tiny niche in a beam, was a mere mud screen, shutting in the lower half of the niche, with a few mud pellets inside, apparently to round off the corners. All consisted exteriorly of pellets composed of mud, more or less mingled with dry fir-needles, straw, and the like—a coarser and far less tidy structure than that of the Wire-tailed Swallow. Interiorly the lining appeared to be chiefly soft feathers; but there was a little fine grass, and in one some grey, very soft fur, which I could not make out. There were four eggs, slightly incubated, in the Murree nest; but I believe they sometimes lay six.

"From Sikhim, Mr. Gammie writes:—'The Common Swallow arrives in this district in the beginning of February, and remains till the end of October. They commence building about the end of March, and place their nests in coolie-sheds, stables, outhouses, or open verandahs. The nest is the usual mud structure, thickly lined with soft feathers. As the soil there is not very adhesive, it is mixed with a good deal of grass. In the stable at Rungbee, six or eight pairs used to breed regularly; and the Syces, who took an interest in them, used to fix up small boards here and there, at angles with the roof, on which the Swallows readily built. When undisturbed they get very tame, and I have seen a pair coolly feeding their young on the nest when the heads of four Europeans were within a foot of it. After ministering to the wants of their family, they would perch within a yard of the spectators, and give them a pleasant little song. They breed at least twice in the season, and, I think, occasionally three times. On the 29th of April I took a nest containing five hard-set eggs out of a kutcha bungalow, and on visiting the

same place on the 26th of June following found that the same pair, in the interim, had built a rough nest and reared a brood, which had flown about four days before, and the parents were busy repairing the nest for a third batch of eggs. The usual number of eggs is four or five."

With regard to Swallows in Manipur, Mr. Hume writes :—"One form or the other is common throughout the region, and in Manipur I found the somewhat larger form (=*H. rustica*) common to a degree. In the hills, western, southern, and eastern, chiefly about water, in the Kopum Thull and the basin itself it was found *passim*. In the basin they were building early in March, and in the hills in May." Col. Godwin-Austen found a Swallow breeding at Asalu, in the Khasia Hills, in April, which was doubtless also the present species.

Mr. Oates observes :—"Found abundantly over the whole of British Burmah. Most of the birds seen are immature, and may be observed all the year round. The adults apparently visit Burmah chiefly in the winter, from September to April. I have not seen any indications of its breeding in the Province. The Common Swallow, according to my observations, is to be found pretty well all the year through in Burmah. It is always seen in large numbers flying in circles after its insect food, and frequently settling on telegraph-wires, dead trees, bare fields, and stalks of grass. On a cold morning they may frequently be observed resting on the sunny bank of some river in immense flocks."

As before mentioned, the Pegu birds are true *H. rustica*, but *H. gutturalis* occurs there also, and the intermediate form as well. Messrs. Hume and Davison state that, in Tenasserim, Swallows were excessively common everywhere throughout the province, wherever there were clearings or open spaces. The ample series collected by Mr. Davison in Tenasserim for the Hume collection shows that, as in Pegu, both *H. rustica* and *H. gutturalis*, as well as the intermediate race, are found in that country.

We have not seen a specimen of the European Chimney-Swallow from any part of the Malayan Peninsula; but *H. gutturalis* occurs there, and intermediate specimens are plentiful in collections. We have, however, seen true *H. rustica* from Java, Luzon, Mindanao, Palawan, Kina Balu, Celebes, and Batchian. Doubtless true *H. gutturalis* likewise occurs in all these localities, and it is certain that intermediate specimens are equally widely distributed.

In China, the bulk of the birds examined by us have proved to be *H. gutturalis*, and we have also seen some of the intermediate form, but examples of the true *H. rustica* are in the British Museum from Shanghai and Amoy.

It would seem, therefore, that the western form of Chimney-Swallow is *H. rustica*, and the eastern form *H. gutturalis*, while intermediate forms between these two are numerous and occupy an intervening habitat. It will be impossible, however, to define the exact limits of each form till a larger series has been examined.

In Africa, the Common Swallow is chiefly known as a migrant, spending its winter season in that continent when absent from Europe. Captain Shelley, in his 'Birds of Egypt,' writes :—"This bird is properly only a spring and autumn visitant in Egypt, arriving there on its way north about the middle of April; but a few possibly remain in

the country throughout the year, for we once obtained an immature specimen in the Delta on the 25th February. In Nubia it appears to be the only Swallow, there replacing *H. savignii*, for on our return journey in 1870 we did not meet with a single specimen of the latter bird south of Girgeh, where in the beginning of May these two species were equally abundant."

The late Baron von Heuglin states:—"In the beginning of March to early in May, and between August and October, this bird is frequently seen in companies on migration, often mixing with other species along the Nile and the Red Sea, and even on the true steppes. On the 15th of November, 1857, I even observed on the Somali coast a flight of migrating Chimney-Swallows. Amongst the Chimney-Swallows which are found during the summer in the Red Sea, I have never observed *H. cahirica*." Von Heuglin observed the Common Swallow near Tadjura, and Mr. Blanford says that it abounded on the shores of Annesley Bay in the middle of June. Neither of the above-named naturalists, however, states positively that they found the species nesting.

Mr. Wyatt did not notice this Swallow in the Sinaitic Peninsula before the 6th of April, when he spent two days by the side of the Gulf of Akabah. He then saw several coming from across the gulf or following it, all of them going in a northerly direction, making for Palestine by the Arabah.

Colonel Yerbury states that the Swallow visits Aden in rough weather; it may come at any time in the year, but only remains a few days. Lieut. H. E. Barnes writes:—"The Chimney-Swallow is not very common, and, as a rule, is only found immediately after rough weather; but some few do remain to breed, as I found a nest containing three eggs under the verandah in the upper story of one of the hotels at Steamer Point. The appearance of these birds is not confined to any period; I find from my notes that I have observed them in May, July, August, and December."

The late Consul Swinhoe states that on one of his voyages to China he noticed a few Swallows near Aden on the 5th of November, "apparently bound for the Indian coast." That one migration-line of the Common Swallow is along the Nile Valley seems certain, as it has been obtained by Emin Pasha at Wadelai on the 30th of September, and at Lado on the 30th of October. Captain Shelley has also recorded it as found by Sir John Kirk at Lamo in East Africa, on the Pangani River, and in Ugogo. The late Dr. Fischer met with the species at Maurui and Ukaramo, and again at Karatschongo on the 2nd of March, during his last expedition to the Victoria Nyanza. Dr. Böhm records the Swallows as occurring along the Lualaba in great flocks in October.

"To Southern Africa," Mr. Layard writes, "the European Swallow is a regular and common visitant to the Cape Colony, throughout the whole of which it is distributed. In 1867 the first bird arrived in Cape Town on the 27th of July, and we have noticed a few stragglers as late as the 2nd of April. Although the species stays with us for the greater part of the year, it does not appear to breed, and we believe that all the young birds which are seen in S. Africa are not natives but are visitors from the north." Captain Shelley says that it was by far the most abundant Swallow in Cape Town, and,

indeed, wherever he went it was exceedingly common. Dr. Bradshaw noticed it very plentifully on the Orange River. We have seen a considerable number of specimens from all parts of the Cape Colony and Natal, and Mr. Ayres has met with the species near Potchefstroom in January. He says: "I found these Swallows, mostly young birds, congregating on the mimosas in company with *H. cucullata*." In the Lydenburg district of the Transvaal he states that this Swallow "appeared in fair numbers amongst the mountains during the summer months, and very probably bred amongst the rocks."

The following interesting note appears in Mrs. Monteiro's excellent little work on Delagoa Bay :—"It was in the beginning of March, and the rain had poured in torrents all night, and continued the whole of the next day, the wind blowing a perfect hurricane, the thermometer suddenly dropping to 63°. About 11 A.M. a drenched miserable Swallow flew into the house and perched himself on one of the partitions of the rooms; then one flew into the kitchen, and my boy caught it and brought it to me. I held the poor mite in my hands for a little while, to warm him, and then let him fly up to his companion in misfortune, by whose side he at once nestled down. In a few minutes more began to come in, at first singly, then by twos and threes, some fluttering helplessly among the white window-curtains and beating themselves against the glass. These I caught and let fly up to their friends, and was surprised to find that they were not in the least alarmed at being touched, but seemed to like the warmth of the hand, and would perch quite confidingly on my finger, and not attempt to move when I stroked their little heads.

"Many were brought me half dead by women and boys, who had picked them up from the ground, and who all wanted a 'pen' (threepence) for them; but for answer I only pointed to my fast-filling house, so they laughed and let me keep the birds, which soon recovered in the dry room. One poor little thing I found suspended in a large spider's web, and, although the wings of a Swallow seem so powerful, it was quite unable to extricate itself. They continued to come in all day, and before 5 o'clock more than a hundred had taken shelter, and the twittering and fuss that went on were most amusing. When it began to grow dark they packed themselves up for the night on the partitions as close as they could possibly crowd together, two and three deep. Most of them went to roost with their tails spread out, perhaps in order to dry them thoroughly, and the round white spot on the tip of each feather had a very curious appearance when they were all asleep and quiet. I fully expected to find the bottom row dead from suffocation the next morning, but only three had fallen victims, and these I immediately skinned. They stayed with me till about noon, one or two occasionally flying out and returning, apparently to report on the state of the weather, and then all leisurely took their departure, no doubt very glad to see the sun again shining brightly. I felt quite sorry when my little visitors departed, but was glad they chose their countrywoman's house in their time of need, for they proved to be English Swallows."

In the Newcastle district of Natal Colonel Butler and Capt. Savile Reid first

observed the Swallow on the 19th of October. They were "much more numerous down country, and large flocks were seen both at Richmond Road and Durban."

The late Mr. Andersson believed that the Common Swallow nested in Damara Land, as several other European birds are similarly stated to do during their absence from their northern habitat. He gives the following note:—"Pretty common in Damara and Great Namaqua Land during the rainy season, and I have found it very numerous at Walvisch Bay and in other localities near the coast. In uncivilized parts of Africa these Swallows affix their nests to some projection of a rock or trunk of a tree, or occupy cavities in rocks or banks." Mr. Seebohm, however, doubts the identification of the species, and believes that the bird met with by Andersson was *H. albigularis*. It is, however, noteworthy that not a single specimen of the latter species was ever noticed in Mr. Andersson's collection from Damara Land, whereas *H. rustica* was obtained by him, and Mr. Andersson was further well acquainted with *H. albigularis*, of which he had collected several specimens in the Cape Colony. Mr. Seebohm's note is as follows:—"Andersson, in his 'Birds of Damara-Land,' remarks of *Hirundo rustica* that it breeds in that country; but there can be little doubt that the Swallow which he supposed to be our species was the White-throated Swallow (*Hirundo albigularis*), which he does not mention, and which he probably mistook for the female of our bird. His further remark that in consequence of the scarcity of houses it breeds in rocks and *trees*, adds still more doubt to the accuracy of his observations. I have seen the Swallow breeding under overhanging cliffs in the Dobrudscha, but I never heard of its having been found nesting in a tree." There is, doubtless, some mistake as to the species intended by Andersson, as our Common Swallows are too much occupied with their moulting during their stay in South Africa to feel inclined to breed.

In West Africa the species is met with in Senegambia. Mr. De Rochebrune records it as a migrant throughout the whole of the region; but Dr. Rendall only noticed a single bird in October, and we ourselves have never seen a specimen from any part of Senegambia. Mr. Büttikofer has collected a large series in Liberia, mostly in changing plumage. On the Gold Coast it is also plentiful during our winter, and some of the specimens killed before the return journey are peculiarly rich in plumage. It has been sent from Old Calabar and Gaboon. A specimen from the Camma River, collected by Du Chaillu, is recorded by Cassin as *H. cahirica*, but was doubtless only a brightly coloured *H. rustica*. Professor Barboza du Bocage states that Anchieta has obtained the species at Novo Redondo in Angola, and refers to its occurrence at Landana and Chinchonxo on the Lower Congo. Anchieta has also met with it at Quillengues and Caconda, in Benguela.

The following excellent notice of the Swallow and its ways is given by Colonel Vincent Legge in his 'Birds of Ceylon':—"Much might be written concerning the habits of the favourite harbinger of our English spring; but they are well known to the most casual observer, and my space will not permit of any lengthened dissertation on the economy of this interesting bird. Of late years, since the climate of old England has undergone such changes, the saying that 'one Swallow does not make a summer'

is disagreeably true; but, nevertheless, the first welcome sight of the sweet bird, its shining plumage illumined by the fitful sunbeams of a chilly April day, conduces to the hope that soon the bitter east wind will have blown itself out, and that Nature must speedily array herself in that joyous verdant attire which makes the warm English May-day so inexpressibly lovely. To the resident in Ceylon the Swallow brings no such pleasant prospect; it arrives in the midst of the wind and rain with which the south-west monsoon dies out, and foretells nothing but the usual dry Christmas weather of this part of the tropics. Yet its presence on the Galle Face at Colombo, as it skims along just above the turf on a bright though windy morning, or sits in rows of a dozen or more twittering its winter notes on the telegraph-wires at noon, is not without a charm, and reminds one of the home that has been left behind far beyond the western horizon. The time and place, however, in which to see the Swallow to perfection is when it is careering over a beautiful English lawn on a bright June morning, sweeping round the handsome conifers and beneath the spreading oaks; or when, glancing out of some rustic barn, it darts like a polished arrow down the tiny brook or round the village green in search of a mouthful for the little brood so snugly housed against yonder beam. In Ceylon we miss the pretty little chattering song of the male in the breeding-season, although it does commence it before leaving in March. Scores of these birds may be seen perched on the telegraph-wire crossing the 'Lotus-pond' at Colombo, a spot which furnishes a never-failing supply of insects; and they may frequently, as in other countries, be observed seated on roofs or on some little eminence on the ground. As is the case in England, before leaving the island they collect in flocks, but in much fewer numbers, as there are no young birds to congregate together. Few birds enjoy such an immunity from persecution as the Swallow; it is rarely shot except by those who are really in want of skins for scientific purposes."

Colonel Legge, who is now living in Tasmania, from the words of his last sentence, evidently does not know of the cruel and senseless war which has been waged of recent years against the unfortunate Swallows, for millinery purposes and the decoration of ladies' hats, in Europe. Luckily the tide of public opinion has turned against those thoughtless persons who caused the death of these innocent and useful insect-eating birds, and the Swallow is now more free from persecution. The reason of the protection of the Swallow in most countries is doubtless due not only to its confiding disposition, but also to the vast amount of good which the bird does. "In Morocco," M. Favier says, "the Moors believe that it offends God to kill these birds, in the same way as they believe it pleases or soothes the Evil One to kill the Raven (*Corvus corax*). The stories on which this superstition is founded are too long to relate; but I was informed by one person that the Swallows and White Storks were inspired by Allah to protect the harvest and the country from noxious insects and reptiles, and that the birds themselves (knowing the benefits they confer on man) ask in return protection for their offspring by building their nests on the walls of towns and houses, and that therefore any one who kills them must be a Kaffir, *i. e.*, not a true believer of the Prophet, especially as the birds would only be killed for mischief, being useless when dead."

The habits of the Common Swallow are familiar to everyone, and have been told and retold in many works on British birds. One of the best accounts appears to us to be that of Mr. Henry Seebohm in his 'History of British Birds,' from which we make the following extract:—"The nest of the Swallow is generally placed on the joist which supports the rafters of a barn or other outhouse, a few inches below the tiles or slates which form the roof. In this position it rests upon the horizontal surface of the joist, and is a ring of mud lined with dry grass and a few feathers. By far the greater number of Swallows' nests which I have seen in this country have been built in this position and on this model. Curiously enough, this is not the case on the Continent. There the Swallow generally builds against a perpendicular wall, but also only a few inches below some horizontal shelf or roof; in this situation the nest is in the shape of a quarter of a hollow globe of mud. To increase the security of the structure it gladly avails itself of any little projection or nail or peg to begin upon. But the usual nest of the Swallow on the Continent only differs from that of the Martin in having the sides as well as the front open instead of built up to the projecting shelf or roof. At the railway-station at Rustchuk dozens of Swallows' and Martins' nests may be seen side by side, and differing only in the manner I have described. In the large building where my friend Oberamtmann Nehrkorn stall-feeds his cattle, near Brunswick, the roof is supported by iron pillars, and many Swallows build their nests under the heavy beams which rest upon them, using the iron ring which does duty as a capital to lay the foundation mud upon. The continental system approaches nearest to the habits of the Swallow in a state of nature. When Mr. Young and I were in the Dobrudscha we twice had the good fortune to find small colonies of these birds, so to speak, wild. In one case the nests were built against the perpendicular cliffs under an overhanging ledge of rock, leaving perhaps an inch of space all round for the ingress and egress of the bird. In the other case the nests were built in exactly similar situations on the roofs of caves. In one nest the eggs were nearly hatched, and we watched the birds flying in and out, so that no possible doubt as to the species could arise. One of the nests was in the occupation of a Sparrow. Several other instances of the breeding of the Swallow in cliffs and caves have been recorded. Edwards has noticed it so doing on the coast of Banffshire; and Ridgway found the American form of the Swallow breeding in caves in Nevada, one of the Pacific States, and also mentions that in America it often builds against a perpendicular wall if it cannot find a suitable horizontal rafter. Other localities are also chosen in England. It often breeds in chimneys and occasionally down a well or an old mine, or under a bridge or a doorway, in all of which situations the nest is generally built on the continental model. Dixon has seen its nest in buildings on stones projecting from the wall several feet from the roof or any other shelter. Blyth records one instance of a Swallow building in the hole of a tree about thirty feet from the ground; and Yarrell figures a nest built in the fork of the branch of a sycamore tree. To make the nest strong, the Swallow mixes with the mud of which the walls are composed dry grass, straw, or hair. The mud-made shell or cup is neatly lined with dry grass and a few feathers, generally obtained as the bird flies through the

air. In shape the nest is very shallow, and, unlike the House-Martin's, is always open, leaving the sitting bird exposed to view. Some nests are much more carefully made than others, depending to a great extent on the peculiarities of the chosen site. In some cases little more than a rim of mud is formed, in which the softer materials are placed, whilst in others a perfect saucer is formed of mud, straws, and little sticks before the lining is put in.

"The Swallow builds a fresh nest every year, generally close to the one of the previous year, consequently many old nests may be seen close together. The eggs of the Swallow are from four to six in number, and vary considerably in shape and markings. The ground-colour is always pure white, and the markings are rich coffee-brown, violet-grey, and light reddish brown; these are usually distributed over the entire surface of the egg, but most thickly at the large end. The grey underlying markings are far more numerous and larger on some eggs than on others. The spots vary considerably in size: on some eggs they are small specks, on others large spots and blotches, sometimes confluent on the larger end, forming a broad irregular zone. The eggs vary in length from 0·9 to 0·75 inch, and in breadth from 0·58 to 0·52 inch. The eggs of the Barn-Swallow very closely resemble those of the Rock-Martin (*C. rupestris*); indeed so much so that they cannot with certainty be distinguished.

"The sitting bird is fed by its mate, who constantly visits her with joyous twittering cries during the whole period of incubation. The Swallow usually rears two broods in the season. The eggs of the first clutch are generally laid early in May, and the young are able to fly by the end of June; those of the second clutch are laid early in July, and the young are, in most cases, fully fledged by September; but exceptionally late broods are frequently deserted by their parents. The young are tended some little time after they quit the nest, and are often fed on the wing."

For the following interesting note we are indebted to Mr. Edward Bartlett, the late Curator of the Museum at Maidstone. Writing from that place on the 15th of September, 1885, he observes:—"Lately our benefactors Messrs. T. and J. Hollingworth, ordered the huge Elizabethan chimneys over the Hall and Great Hall of this Institution to be restored, and knowing that the Swallows had bred in them for years, I was anxious to see the positions of the nests. In the first chimney I found a nest of four eggs on the 15th June, 1885, at the depth of seven feet from the top of the stack. In the second stack of chimneys, with several shafts, and some of them extremely narrow, I found a nest of three eggs on the 20th August, 1885, six feet six inches from the top of the stack; they had been sat on about five days, therefore the young would be hatched about the 28th of the same month, and if we allow six days for the young to become fully fledged and able to fly from the nest, it would bring the date up to September the 3rd.

"In another shaft of the same stack was a nest with four unfledged young, which was eight feet six inches from the top of the stack, and in an extremely narrow shaft; it appeared almost impossible for a Swallow to descend to so great a depth. I had often

watched them, and noticed the old birds hovering over the top of the stack before descending, and from what I have now seen I am convinced that the Swallow descends to the nest with upraised wings, dropping straight down to any depth necessary. I have often caught the young birds which had fallen into the rooms from these great chimneys, having no doubt attempted the ascent from the nest before they were able or strong enough.

"In the third great stack I found two nests. One was eleven feet two inches from the top, and the lower portion of it was many years old, showing that several nests had been added to it, and this year's new work was easily recognizable; the young had been reared in it."

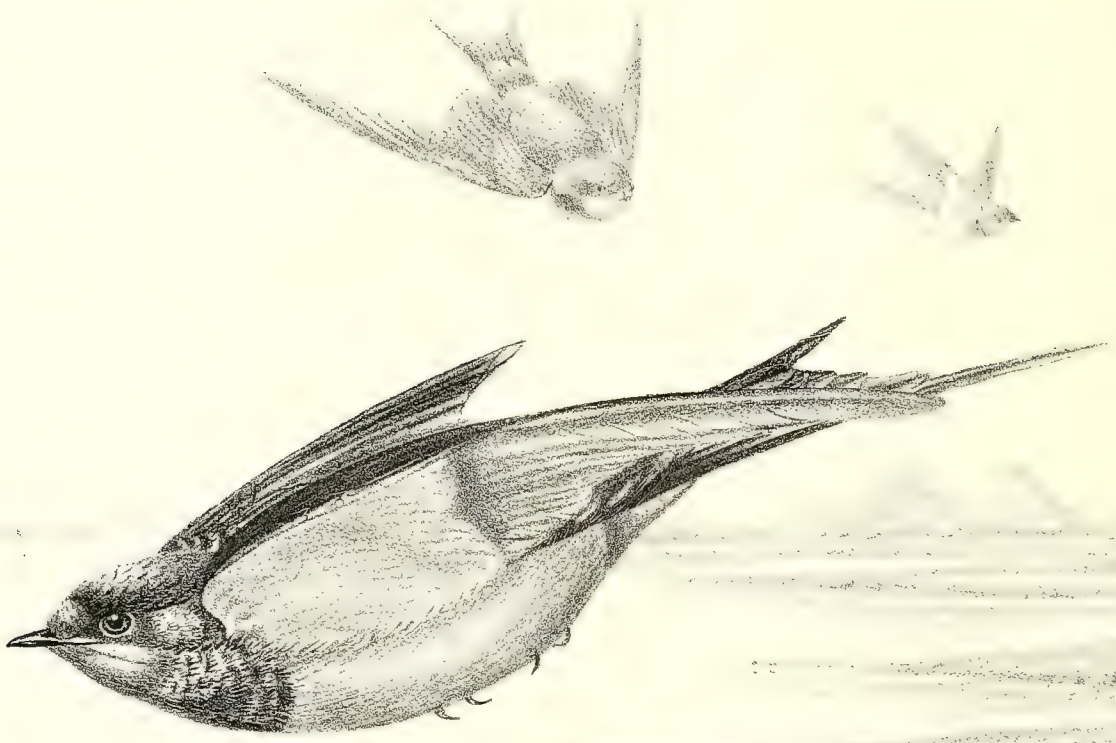
In the 'Times' for the 17th of September, 1888, occurs the following note from a "Traveller":—"For several successive years a pair of Swallows erected their nest on the three prongs of a dungfork (the wooden handle of which had broken off), which was placed horizontally, so as to project from the side of the shed. During the winter of 1886 a gig-lamp which had been deprived of its door was suspended in the shed. Last summer the birds selected it as their residence, which proved so much to their satisfaction as to induce them to adopt it again during the present year. The shed stands in the parish of Pagham, not far distant from Bognor, where the lamp and its recently vacated nest may still be seen."

Mr. Hume, in his 'Nests and Eggs of Indian Birds,' gives the following carefully-written account of the eggs of the Swallow as observed by him during his many years' residence in India:—"The eggs of this species," he writes, "vary very much in size and a good deal in shape. Typically they are elongated ovals, a good deal compressed towards the smaller end. The cubic contents of some eggs must be nearly double those of others. The shell is very fine and compact, and has, in some eggs, a slight gloss. The ground-colour varies from pure white to a pale salmon-pink, but in the majority it is white. Typically the eggs are pretty thickly spotted and speckled with brownish red and inky purple, the markings being always most numerous, and at times very dense, towards the large end, where they occasionally form an irregular zone. Sometimes the brownish red is replaced by a slightly reddish olive-brown. In some eggs the markings want the speckly, spotty character of the typical egg, and are merely pale inky-purple and brownish-red clouds. In some, again, the markings are, as a whole, much more minute, and the whole surface of the egg is finely freckled and mottled with pale brownish red.

"In size the eggs vary from 0·7 to 0·84 inch in length, and from 0·5 to 0·55 inch in breadth; but the average of seventeen eggs is 0·76 by 0·53 inch."

The figures of the adult and young birds have been taken from specimens procured by Mr. Wyatt, and the third Plate represents a moulting bird in its winter home in South Africa, showing the contrast between the worn-out plumage of the previous season and the bright blue plumage which the bird assumes before it leaves for Europe. This individual is in the British Museum.

For the geographical distribution of this species *vide infrà*, Plate 43 [Map].



Mintern Bros. imp.

HIRUNDO SAVIGNII.

HIRUNDO SAVIGNII (*Stephens*).

EGYPTIAN SWALLOW.

Hirundo savignii, Steph. Gen. Zool. x. p. 90 (1817); Dubois, Ois. Eur. pl. 34 (c. 1862); Dresser, B. Eur. iii. p. 473, pl. 160, fig. 2 (1875); B. O. U. List Br. B. p. 42 (1883); Tristram, Fauna & Flora of Palestine, p. 60 (1884); Sharpe, Cat. Birds in Brit. Mus. x. p. 133 (1885); E. C. Taylor, Ibis, 1886, p. 279.

Hirundo cahirica, Licht. Verz. Doubl. p. 58 (1823); Gray, Gen. B. i. p. 57 (1845); Bp. Consp. i. p. 328 (1850); Cass. Cat. Hirund. Mus. Phil. Acad. p. 2 (1852); Bp. Rivist. Contemp., Torino, 1857, p. 4; Blasius in Naum. Vög. Deutschl., Nachtrag, p. 307, Taf. 383, fig. 1 (1860); Antin. Cat. descrr. Ucc. p. 26 (1864); Allen, Ibis, 1864, p. 237; Blyth, Ibis, 1866, pp. 237, 336; Taylor, Ibis, 1867, p. 56; Tristram, Ibis, 1867, p. 361; Degl. et Gerbe, Orn. Eur. i. p. 589 (1867); Gray, Hand-l. B. i. p. 68, no. 789 (1869); Heugl. Orn. N.O.-Afr. i. p. 152 (1869); Fritsch, Vög. Eur. Taf. 23, fig. 1 (1870); Heugl. Orn. N.O.-Afr. iv. App. p. lvi (1873).

Hirundo riocouri, Audouin, Descr. de l'Egypte, p. 270, pl. 4, fig. 4 (1825); Cab. Mus. Hein. Th. i. p. 46 (1850); Cass. Cat. Hirund. Mus. Philad. Acad. p. 2 (1853); Sharpe & Dresser, P. Z. S. 1870, p. 247; Sharpe, t. c. p. 305; Wyatt, Ibis, 1870. p. 12; Shelley, B. Egypt, p. 121 (1872); Gurney, Ibis, 1875, p. 519.

Cecropis savignii, Boie, Isis, 1828, p. 316.

Hirundo castanea, Less. Traité d'Orn. p. 268 (1831).

Hirundo boissoneauti, Temm.; Schl. & Susem. Vög. Eur. vi. Taf. 2, fig. 2 (1839); Temm. Man. d'Orn. iv. p. 652 (1840); Linderm. Vög. Griechenl. p. 119 (1860).

Hirundo rustica, var. *orientalis*, Schl. Rev. Crit. p. xviii (1844); Adams, Ibis, 1864, p. 14.

Cecropis riocouri, Rüpp. Syst. Uebers. p. 22 (1845); Heugl. Syst. Uebers. p. 16 (1856).

Cecropis boissoneauti, A. E. Brehm, J. f. O. 1853, p. 452.

Cecropis cahirica, C. L. Brehm, Naum. 1855, p. 271.

Hirundo rustica orientalis, Temm. & Schl. Faun. Jap., Aves, p. 32 (1850); Leith Adams, Ibis, 1864, p. 14.

Hirundo rufa (nec Gm.), Swinh. Ibis, 1864, p. 414.

Hirundo boissoneauti latirostris, A. E. Brehm, Verz. Samml. C. L. Brehm, p. 3 (1866).

Hirundo boissoneauti microrhynchos, A. E. Brehm, t. c. p. 3 (1866).

Hirundo boissoneauti minor, A. E. Brehm, t. c. p. 3 (1860).
Hirundo rustica, var. *cahirica*, Doderl. Avif. Sicil. 1869, p. 144.
Hirundo rustica, var. *savignii*, Bree, B. Eur. iv. p. 85 (1875).
Chelidon savignii, Stejn. Pr. U.S. Nat. Mus. vi. p. 31 (1882).

H. similis *H. rusticæ*, sed fasciâ frontali et corpore subtùs castaneis.

Hab. in terrâ Ægyptiacâ.

Adult male. General colour above deep purplish blue, the hind neck and mantle slightly varied with the rufous-white bases to the feathers; wing-coverts like the back; quills black, glossed externally with dull greenish steel-blue; tail-feathers black, also glossed with steel-blue, with a rufescent spot on the inner web, larger on the outer feather; crown of the head like the back, with a frontal band of dark chestnut; lores and feathers below the eye black; ear-coverts blue-black; entire under surface of body deep chestnut, the throat richer in colour and separated from the breast by a broad band of deep purplish blue across the fore neck; under tail-coverts, under wing-coverts, and axillaries like the breast; quills dusky below. Total length 6·4 inches, culmen 0·35, wing 4·5, tail 3·6, tarsus 0·4.

A specimen from Girgeh, killed in March, is of a more intense chestnut than any others we have seen; the rufous bases to the dorsal feathers are very strongly pronounced, and form a very conspicuous feature.

Hab. Egypt.

This species closely resembles the Common Chimney-Swallow, but is easily distinguished by its deep chestnut forehead and underparts. The other chestnut-breasted Swallows of this group do not have a complete breast-band.

It is a resident in Egypt and Nubia, and although it has been recorded from many other countries of Europe, even from England, there can be little doubt that fine males of *Hirundo rustica* in spring plumage have been mistaken for the Egyptian form. The male of *H. rustica*, on its arrival in this country, is often beautifully tinged with rufous underneath, but never has such a deep chestnut under surface as *H. savignii*. Mr. Styan's notice of the species in China (P. Z. S. 1886, p. 268) refers of course to *H. tytleri*.

Captain Shelley writes :—

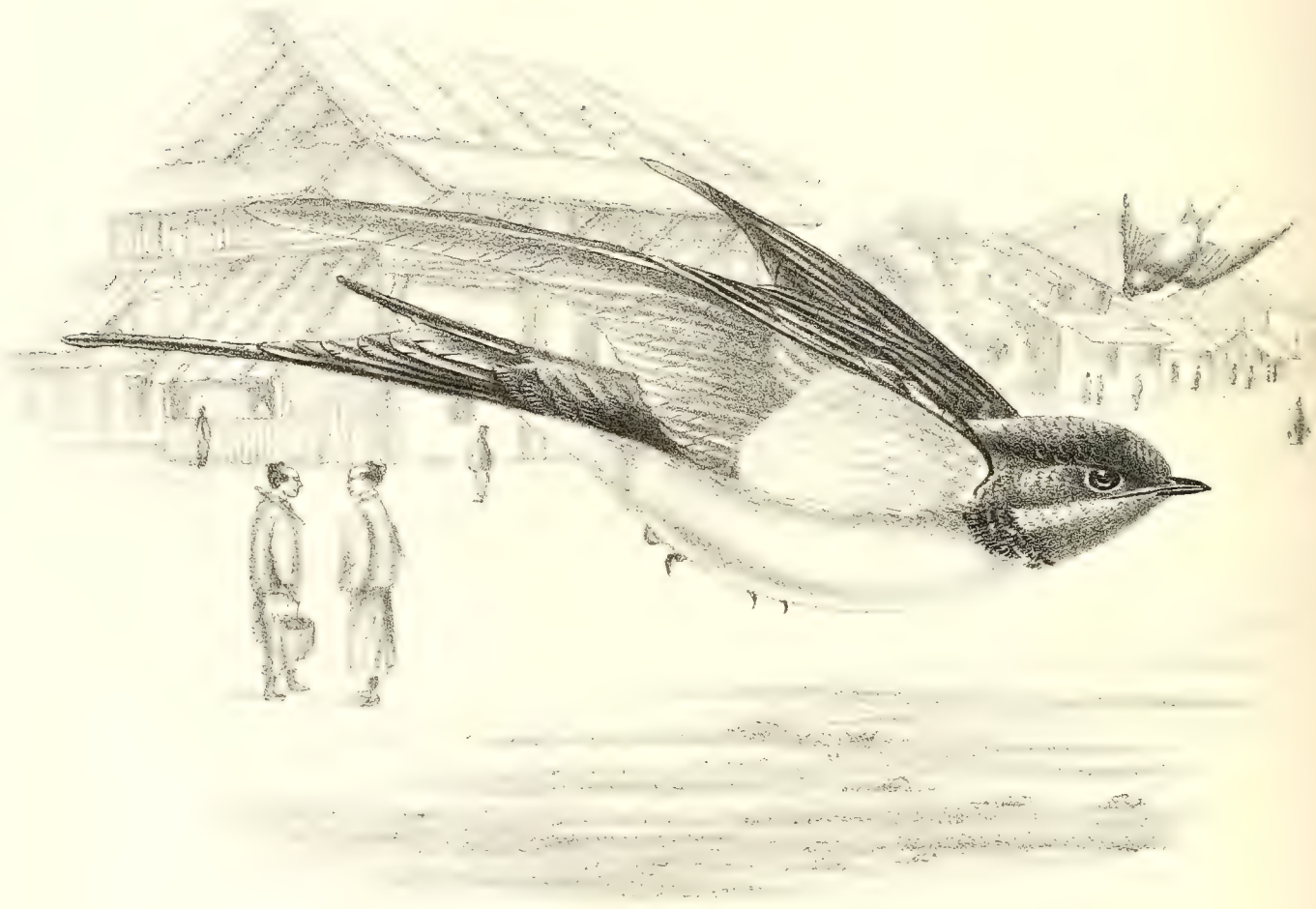
"This species is resident in Egypt and very abundant. It differs from the last species (*H. rustica*) in not being migratory, and it keeps more exclusively to the neighbourhood of houses, usually selecting the inside of some native mud-hut for its nest, which it begins to construct in February."

Mr. E. C. Taylor states that he found the present species resident in Egypt throughout the winter; and von Heuglin found it breeding in that country between January and April, but records that it does not occur further south than 25° N. lat. The nests are met with in towns and villages, placed under rafters, in the corners of windows, and elsewhere in inhabited buildings, as well as in tombs, wells, and mosques. He did not

notice the species in Arabia, but Mr. Wyatt saw it once in the Sinaitic Peninsula, at Wády Ureit, on the 24th of March. It was no doubt an accidental visitor from Egypt, and as Mr. Wyatt was well acquainted with the species in the latter country, there can be no doubt as to the identification.

Canon Tristram states that *Hirundo savignii* is a constant resident in the Holy Land; but it should be remarked that we have examined several specimens obtained during Canon Tristram's expeditions to Palestine, and they were certainly not true *H. savignii*, but a very dark form of *H. rustica*. For this reason we believe that the former bird is strictly confined to Egypt.

The description is taken from specimens in the British Museum, and the Plate is drawn from a bird shot by Mr. Wyatt near Cairo.



C W W del

Mintern Bros. im

HIRUNDO GUTTURALIS

HIRUNDO GUTTURALIS, *Scop.*

EASTERN CHIMNEY-SWALLOW.

L'Hirondelle d'Antigue, Sonn. Voy. Nouv. Guinée, p. 118, pl. lxxvi. (1776).

L'Hirondelle d'Antigue à gorge couleur de rouille, Montb. Hist. Nat. Ois. vi. p. 607 (1779).

Panayan Swallow, Lath. Gen. Syn. ii. pt. 2, p. 565 (1783).

Hirundo gutturalis, Scop. Del. Flor. et Faun. Insubr. ii. p. 96 (1786); Temm. Man. d'Orn. i. p. 427 (1820); Gray, Gen. B. i. p. 57 (1845); Blyth, J. A. S. Beng. xvi. p. 117 (1847); Gray, Cat. Fiss. Brit. Mus. p. 22 (1848); Cab. Mus. Hein. Th. i. p. 46 (1850); Cass. Cat. Hirund. Philad. Mus. p. 1 (1853); Gray, P. Z. S. 1860, p. 365; Swinh. Ibis, 1860, pp. 48, 428, 1861, p. 30, 1863, p. 255, 1867, p. 411, 1870, pp. 90, 240; id. P. Z. S. 1871, p. 346; Jerd. Ibis, 1871, p. 351; Dybowski, J. f. O. 1872, p. 351; Wald. Tr. Z. S. viii. p. 65 (1872); Swinh. Ibis, 1874, p. 151; Wald. Tr. Z. S. ix. p. 184 (1875); Salvad. Ann. Mus. Civic. Genov. ix. pp. 55, 64 (1876); Tacz. Bull. Soc. Zool. France, i. p. 133 (1876, pt.); Blakist. Ibis, 1876, p. 331; Hume, Str. F. iv. p. 286 (1876), v. p. 17 (1877); Tweedd. P. Z. S. 1877, pp. 545, 694; Prjew. in Dawson Rowley's Orn. Misc. ii. p. 160 (1877); David & Oust. Ois. Chine, p. 124 (1877, pt.); Hume & Davison, Str. F. vi. p. 41 (1878); Cripps, Str. F. vii. p. 256 (1878); Salvad. Ann. Mus. Civic. Genov. xiv. p. 490 (1879); Meyer, Ibis, 1879, p. 128; Hume, Str. F. viii. pp. 47, 84 (1879); Sharpe, P. Z. S. 1879, p. 344; Seebohm, Ibis, 1879, p. 29; Hume, Str. F. ix. p. 245 (1880); Tweedd. Rep. Voy. 'Challenger,' ii. Birds, p. 18 (1880); Bingham, Str. F. x. p. 148 (1881); Sclater, Rep. Voy. 'Challenger,' ii. p. 116 (1880); Kelham, Ibis, 1881, p. 372; Salvad. Orn. Papuasia e delle Molucche, ii. p. 1 (1881); Blakiston & Pryer, B. Japan, p. 130 (1882); Jouy, Proc. U. S. Nat. Mus. vi. p. 290 (1883); Pleske, Bull. Acad. St. Pétersb. xxix. p. 528 (1884); Meyer, Sitz. Ges. 'Isis,' Dresden, 1884, Abth. i. p. 6; Blakist. Amended List B. Japan, p. 14 (1884); Sharpe, Cat. B. Brit. Mus. x. p. 134 (1885); Guillem. P. Z. S. 1885, p. 569; Vorderm. N. T. Nederl. Ind. xli. p. 192 (1882); W. Blasius, Zeitschr. ges. Orn. iii. p. 108 (1886); Styan, Ibis, 1887, p. 227; Sharpe, P. Z. S. 1887, p. 442; id. Ibis, 1887, p. 200; Blasius, Ornis, iv. p. 580 (1888); Everett, Journ. Straits Branch As. Soc. 1889, p. 134; Steere, List B. & Mamm. Exped. Philipp. p. 16 (1890); Oates, Faun. Brit. Ind., Birds, ii. p. 277 (1890); Seebohm, Ibis, 1890, p. 102; Salvad. Agg. Orn. Pap. ii. p. 69 (1890); Styan, Ibis, 1891, pp. 323, 351; De la Touche, Ibis, 1892, p. 425.

Hirundo panayana, Gm. Syst. Nat. i. p. 1018 (1788); Moore, P. Z. S. 1854, p. 264; Horsf. & Moore, Cat. B. E. I. Co. Mus. i. p. 91 (1854).

Hirundo jewan, Sykes, P. Z. S. 1832, p. 83; Jerd. Madr. Journ. xi. p. 237 (1840).

Hirundo rustica (nec L.), Meyen, Nova Acta Acad. Cæs. Leop.-Car. Nat. Cur. Suppl. Taf. 10. fig. 1 (1834); Blyth, Cat. B. Mus. As. Soc. p. 197 (1849, pt.); Temm. & Schl. Faun. Japon., Aves, p. 31 (1850); Swinh. Ibis, 1861, pp. 254, 328, & 1863, p. 89; Jerd. B. Ind. i. p. 157 (1862, pt.); Scl. P. Z. S. 1863, p. 217; Gray, Hand-l. B. i. p. 68, no. 786 (1869, pt.); Holdsw. P. Z. S. 1872, p. 418; Hayes Lloyd, Ibis, 1873, p. 405; Sharpe, Trans. Linn. Soc., 2nd ser. Zool. i. p. 328 (1876); Anderson, Zool. Yun-nan Exped., Birds, p. 649 (1878); Blakist. & Pryer, Ibis, 1878, p. 320; Oates, B. Brit. Burm. i. p. 302 (1883).

Cecropis payana, Less. Compl. Buff. viii. p. 498 (1837).

Cecropis jewan, Less. t. c. p. 499 (1837); Boie, Isis, 1844, p. 174.

Cecropis rusticoides, Boie, Isis, 1844, p. 174 (ex Kuhl, MS.).

Cecropis panayana, Boie, t. c.

Hirundo javanica (nec Sparrm.), Bp. Consp. i. p. 338 (1850); Bernst. J. f. O. 1859, p. 267; Blakist. Ibis, 1862, pp. 315, 316; Whitely, Ibis, 1867, p. 196.

Hirundo rustica, var. *rufa* (pt.), Midd. Sibir. Reise, Vög. p. 188 (1851); Schrenck, Reis. Amurl. i. p. 387 (1860); Radde, Reis. im Süd. v. Ost-Sibir. ii. p. 278 (1863).

Hirundo fretensis, Gould, Handb. B. Austr. i. p. 110 (1865); Gray, Hand-l. B. i. p. 70, no. 815 (1869); Diggles, Orn. Austr. text to pl. 22 (c. 1870).

Hirundo frenata (lapsu cal.), Blyth, Ibis, 1866, p. 336; Gray, Hand-l. B. i. p. 70, no. 816 (1869).

Hirundo andamanensis, Tytler & Beav. Ibis, 1867, p. 316; Gray, Hand-l. B. i. p. 68, no. 791 (1869); Ball, Str. F. 1873, p. 55; Hume, Str. F. 1874, p. 155, & 1876, p. 286.

Hirundo rustica, var. *gutturalis*, Seebohm, Hist. Brit. B. ii. p. 171 (1883).

Hirundo kamtschatika, Dybowski, Bull. Soc. Zool. France, viii. p. 356 (1883).

Hirundo rustica gutturalis, Dyb. & Tacz. Bull. Soc. Zool. France, ix. p. 152 (1884); Hartert, J. f. O. 1889, pp. 354, 389; Seebohm, Ibis, 1890, p. 102; id. B. Jap. Emp. p. 141 (1890); Tacz. Mém. Imp. Acad. Sci. St. Pétersb. (7) xxxix. p. 174 (1891).

Hirundo rustica borealis, Dyb. & Tacz. t. c. p. 152.

Chelidon gutturalis, Stejneger, Bull. U. S. Nat. Mus. no. 29, p. 271 (1885).

Chelidon kamtschatica, Stejneger, Bull. U. S. Nat. Mus. no. 29, p. 330 (1885).

H. similis *H. rusticæ*, sed minor, et fasciâ præpectorali interruptâ distinguenda.

Hab. in Siberiâ orientali, in peninsulâ Indicâ, in regione Indo-Sinensi et Indo-Malayanâ, et in insulis Moluccanis hibernans.

Adult male. General colour above glossy purplish blue, streaked with the white bases to the feathers of the mantle; wing-coverts like the back; bastard-wing, primary-coverts, and quills blackish,

washed externally with glossy blue; tail-feathers blackish washed with blue, all but the centre ones with a large oval spot of white on the inner web, forming an oblique patch on the outermost feather; forehead dark chestnut; lores blackish; ear-coverts purplish blue; cheeks and entire throat chestnut; the sides of the fore neck purplish blue, the collar not complete, but slightly broken with a few blue spots on the feathers; remainder of under surface from the chest downwards white, including the thighs and under tail-coverts, the flanks with a very faint tinge of smoky brown; axillaries and under wing-coverts pale smoky brown, the outer edge of the wings mottled with dusky bases to the feathers; quills dusky below: "bill black; feet brown; iris black" (*David*). Total length 6·7 inches, culmen 0·35, wing 4·6, tail 3·4, tarsus 0·5.

Adult female. Similar in colour to the male. Total length 6·2 inches, culmen 0·4, wing 4·7, tail 3, tarsus 0·45.

Obs. If one accepts the broken pectoral collar as the best sign of distinction between *H. gutturalis* and *H. rustica*, it will be found to be so only in the majority of specimens, and by no means invariably; in fact there is as much variation with *H. gutturalis* in the direction of *H. tytleri* or *H. erythrogastra*, as there is between *H. rustica* and *H. savignii*, for many undoubted examples of *H. gutturalis* are rufescent below, although there is never such a decided tint as in full-plumaged *H. rustica*.

Young birds from Amoy are not to be distinguished from the young of *H. rustica* from England; and one in Mr. Seebohm's collection has quite as broad a collar as any English specimen.

Hab. Eastern Siberia and Kamtschatka, the Japanese Islands and Northern China, ranging south in winter to India, the Indo-Malayan Sub-Region, and the Moluccas as far as Northern Australia.

The Eastern Chimney-Swallow is a smaller bird than the true *Hirundo rustica* of Europe, and is distinguished by the interrupted black collar on the fore neck, which is never complete in the Eastern bird; the under surface of the body is also whiter in fully adult birds of *H. gutturalis*, and there is less rufous tinge on the underparts, though many of the old birds show a certain amount of this rufous colour on the breast and abdomen. We have already (*suprà*, p. 217) spoken of the intermediate specimens which frequently occur between *H. gutturalis* and *H. rustica*, and it is extremely difficult to apportion the synonymy of these two species, as many records of isolated occurrences may belong to the intermediate form, and that only.

In the British Museum the specimens of true *H. gutturalis* are from the following localities:—Japan; Amoy; Canton; Formosa; Siam; Pegu; Tenasserim; Andaman Islands; Malacca; Java; Sumatra; Labuan; Sarawak; Luzon; Celebes; Batchian; Halmahéra; Bourou; Amboina; Pelew Islands; and the north coast of Australia.

In the Indian Peninsula and the Indo-Burmese countries, examples have been sent from the following places:—Kathiawar; Kamptee; Mhow; Maunbhum; Dibrughur; Shillong; Sadhyia; Sylhet, and Manipur.

The localities of the intermediate specimens in the British Museum collection have already been enumerated under the heading of *H. rustica*, and we believe that the accounts given below may be taken as undoubtedly belonging to *H. gutturalis*.

An awkward piece of tangled synonymy has occurred with regard to the Kamtschatkan Swallows, which has been unravelled by Dr. Stejneger, in his "Results of Ornithological Explorations in the Commander Islands and in Kamtschatka" (Bull. U. S. Nat. Mus. no. 29, p. 330). Dr. Dybowski and the late Professor Taczanowski have described two Swallows from Kamtschatka as *H. kamtschatica* and *H. borealis*. We find from the posthumous work of Dr. Taczanowski that the former is referred to *H. tytleri*, and *H. borealis* to *H. gutturalis*; and Mr. Stolzmann kindly sent us the "types" of *H. kamtschatica* for examination. They are the chestnut-breasted *H. tytleri*, and it is quite possible that Dr. Dybowski intended to name the rufous-coloured bird *H. kamtschatica*, but in his description he says, "Abdomen et sous-caudales *blancs*." There can be little doubt but that the form he here diagnosed was the white-bellied *H. borealis*, for which a similar description is provided. In the work of Dr. Stejneger above quoted, the whole subject is most thoroughly treated, and we fully endorse all that he says. However unfortunate the mistake in the original descriptions, the characters as published must be held to be the responsible ones, and therefore the name of *H. kamtschatica* must be attached to the white-bellied Swallow. As both this name and that of *H. borealis* were afterwards admitted by Taczanowski to be synonyms of *H. gutturalis* and *H. tytleri*, no radical change in nomenclature is involved.

An excellent account of the distribution of the present species in Eastern Siberia is given by Taczanowski in the work published by the Imperial Academy of St. Petersburg after his death; and from this many of the following facts have been compiled.

Dr. Stejneger did not meet with the Eastern Chimney-Swallow in Kamtschatka, but Dr. Dybowski procured a specimen at Petropaulowski on the 4th of June, 1882, and observed several passing northward in spring. In Siberia the species apparently does not extend to the Yenesei, as the specimens procured by Mr. Seebohm in that district were true *H. rustica*, and the intermediate form between the latter and *H. gutturalis*. In fact Taczanowski declares that after examining a large series of Swallows from Siberia and North-eastern Asia, he finds the white-breasted birds only from the Ussuri country and Amoor Land, but he admits that little attention has been paid by collectors to the different forms, and thus it seems better to regard the bulk of the statements referring to Eastern Siberian Swallows as referring to *H. gutturalis*, making no distinction between the form with pure white breast and abdomen and that in which these parts are slightly tinged with rufous. Seeing that in their winter homes both *H. rustica* and *H. gutturalis* often occur side by side it would not be surprising that they often interbred, after their arrival in their summer-quarters.

Although the Russian travellers did not clearly discriminate between the forms of Chimney-Swallow which they met with in Eastern Siberia, yet their various statements have been apportioned to the different forms to which they belong by Dr. Stejneger and Dr. Taczanowski. According to the latter, both Dybowski and Godlewski recognized the Swallow of the Ussuri country as different from the form found in Dauria, the southern Baikal country, and the neighbourhood of Irkutsk. The bird of the latter regions was doubtless *H. tytleri*.

Middendorff found the Swallow only an accidental visitor at Touroukhansk. Schrenck states that it is common and numerous in the Amoor country, appearing about the middle of May, as they were building plentifully on the 2nd of June. They are great favourites with the natives and are protected by them.

Speaking of the work of Middendorff and Schrenck, Dr. Stejneger gives the following interesting note on the distribution of *Hirundo gutturalis* and *H. tytleri*:—"Usually it is nearly impossible to extricate the observations belonging to the different forms, but in this case the difference between *Chelidon gutturalis* and *C. tytleri* was too great for even von Schrenck to ignore altogether, though he by no means suspects them of being separable, much less understands the importance of keeping them separate. Fortunately his remarks enable us to decide which forms he and Middendorff collected at two very important localities. Speaking of the '*Hirundo gutturalis*, var. *rufa*,' which he found throughout the Amur Valley (Reis. Amur-Lande, i. p. 387), he observes that it was 'much paler than the old male among Middendorff's specimens from Udskij Ostrog, and only slightly darker than the old male of the European Barn-Swallow . . . The black band of the fore neck is only narrow and contains some rusty-brown spots.' This description is quite sufficient to identify the Amur Valley bird as *C. gutturalis*, while, on the other hand, the remark plainly shows that the bird which Middendorff collected at Udskij Ostrog, at the mouth of the Uda Valley, is *Chelidon tytleri*. This determination is extremely interesting, since the valleys of the two rivers Amur and Uda are close together, only being separated by the Bureja Mountains; but the direction of the Amur and Ussuri is southern, while Uda comes from the west. The Stanovoj Mountains, which until this point run close to the shore of the Okotsk Sea, make here a sudden bend to the westward, leading over to Dauria and Transbaikalia. According to Middendorff ('Isepiptesen Russl.' p. 125), Vossnessenski met '*Hirundo rustica*, var. *rufa*, at Ajan.' We also know that *Chelidon tytleri* is common on the western coast of Kamtschatka. We know that it does not travel southward over the Kuril Islands and Japan. It seems, then, a pretty safe conclusion that the Swallow at least crosses the Okotsk Sea from some point on the western coast of Kamtschatka, and that when arriving on the opposite coast of the Okotsk Sea it meets the Stanovoj Mountains, and follows the eastern slope of that range southwards, turning westwards at Udskij Ostrog, where the mountains also turn westward."

Mr. Kalinowski met with the present species in the Corea, and procured six specimens near Seoul. He says that it is common, but leaves during the winter.

Mr. Seebohm states that the Eastern Chimney-Swallow is common in all the Japanese islands; and Mr. Jouy gives the following note on the species in that country:—"These birds are familiar objects, flying through the streets and darting into the native houses through open doors. Almost every house in a Japanese town has one or more little wooden shelves, placed just inside the door on one of the rafters of the ceiling, on which the Swallows build their nests and rear their young. Nor is their confidence misplaced; they are as sacred on their shelf as any of the household gods, an offer of money for which is considered an insult. I believe these Swallows rarely build elsewhere

than in the situations I have described." From the Bonin Islands Mr. Seebohm records a specimen as obtained by Mr. Holst on the 3rd of May on Peel Island. Two individuals were seen for a single day on spring migration. During the 'Challenger' Expedition five Swallows were caught on the ship when she was about four days south of Yokohama, on the 7th of April, 1875.

Abbé David states that *H. gutturalis* is the common Swallow of China and Mongolia, arriving at Pekin in the beginning of April, and nesting in large numbers in the houses, where they are protected by the Chinese. Prjewalski gives the following note:—"This eastern representative of our Swallow is met with throughout Mongolia, and breeds there on the huts and even inside the tents, especially in the latter. It very patiently hatches its eggs in the nest, which is fastened to the ceiling. The Swallow, however, is always patronized by the Mongols; the Chinese also never destroy a Swallow's nest; consequently they get so tame that they breed inside the Chinese houses. In S.E. Mongolia the first birds appear about the 23rd of April; but no large migrating flocks were noticed by us. We did not find them in Kan-su; and everywhere in the Ussuri country, near human habitations, we met with *H. rustica*, var. *rufa*, Gm. It arrives about Lake Hanka in the end of April, and leaves there in the early part of September; some few individuals, however, stop much later, and I once observed two as late as the 2nd of October in Hun-Chun."

In China it breeds in all the coast-towns, as noted by Consul Swinhoe. At Amoy he saw it arrive in the first week in March, and observes:—"It is a summer visitor here and pretty numerous, building mud nests, lined with straw and a few feathers, over the doors of Chinese hovels. The natives protect the Swallow, as they believe that good luck attends it."

In his paper on the birds of Hongkong, Macao, and Canton, the same writer says:—"A few arrived in February; but in March they were to be found everywhere, and soon commenced building-operations. It is the only and prevailing species." In Formosa it is a summer visitor, according to Mr. Swinhoe, but is chiefly confined in its distribution to the south-west. It is by no means so common as *H. daurica*, with which it never seems to keep company during the period of nidification. In its habits, its nest, and colour of eggs, &c., this bird entirely agrees with the European *H. rustica*; yet in size it is always smaller, and in minor personal features different. Again, in his account of the birds of Hainan, he writes:—"From the day of our arrival at Hainan, onwards, the Swallow that summers in Canton and up the China coast was frequently seen. Some of them would seem to pass the winter in the island. We saw them at all points of the coast visited. Strangely enough, we met with no other species."

In the Lower Yangtze basin, writes Mr. Styan, "these Swallows begin to arrive in the middle of March, and are numerous by the end of the month; they remain until the first week in November. A great many nest in the shops and huts of the towns and villages, the nests being placed within easy reach of the hand. The natives protect them, and consider their presence of good omen."

Mr. De la Touche says that there are Swallows all the year round at Swatow, but the majority leave in autumn. They quit the neighbourhood of Foochow about the beginning of October, but he has once or twice noticed a stray bird in winter.

Hirundo gutturalis is doubtless a winter visitor to every part of the Indo-Chinese countries. Mr. Oates says that the species visits Burmah, the adult birds chiefly in winter, from September to April, but he has never seen any indication of its nesting there. Most of the birds observed are immature, and may be seen pretty well all the year through. Mr. Davison states that he found Swallows excessively abundant in Tenasserim throughout the province, wherever there were clearings or open spaces. Major C. T. Bingham has met with them in the Thoungyeen Valley from October to February, when it is very common. Specimens from several parts of the Indian Peninsula are recorded by us above, and one of the most typical is the bird from Kathiawar.

Mr. Hume's collection contains specimens of the true *H. gutturalis* from the Malayan Peninsula as well as from the Andamans. We have seen examples from Perak obtained by Mr. L. Wray, who says that Swallows were very plentiful on the summits of the hills. Captain Kelham found them common throughout the Straits Settlements, and says that his specimens are identical with those he procured at Hongkong.

In Java and Sumatra the present bird is a winter visitant, and, indeed, occurs throughout the Malay Archipelago. Dr. Vorderman includes it among his birds of Batavia. Mr. Hartert records it from the Preanger Residency, and Sumatran examples are in the British Museum.

It visits apparently the whole of the Philippine Archipelago, and was recorded by the naturalists who accompanied Professor Steere's expedition, from Luzon, Panay, Guimaras, Mindanao, and Palawan. Mr. Alfred Everett has also obtained it in several of the above-mentioned islands, and Mr. John Whitehead at Taguso in Palawan. We have seen several specimens from Labuan and other parts of Borneo. It has been procured in Sarawak by Doria and Beccari, at Moera Tewch by Fischer, and at Banjarmassin by Motley.

Dr. A. B. Meyer has met with this Swallow near Menado in Celebes in March, at Tello in South Celebes in January, and in the Togian Islands in August. He often noticed them resting on isolated branches of trees in the flooded rice-fields. Both Dr. Meyer and Professor W. Blasius have recorded the species from Great Sanghir Island. The 'Challenger' met with a few individuals at sea on October 21st between the Moluccas and the Philippines.

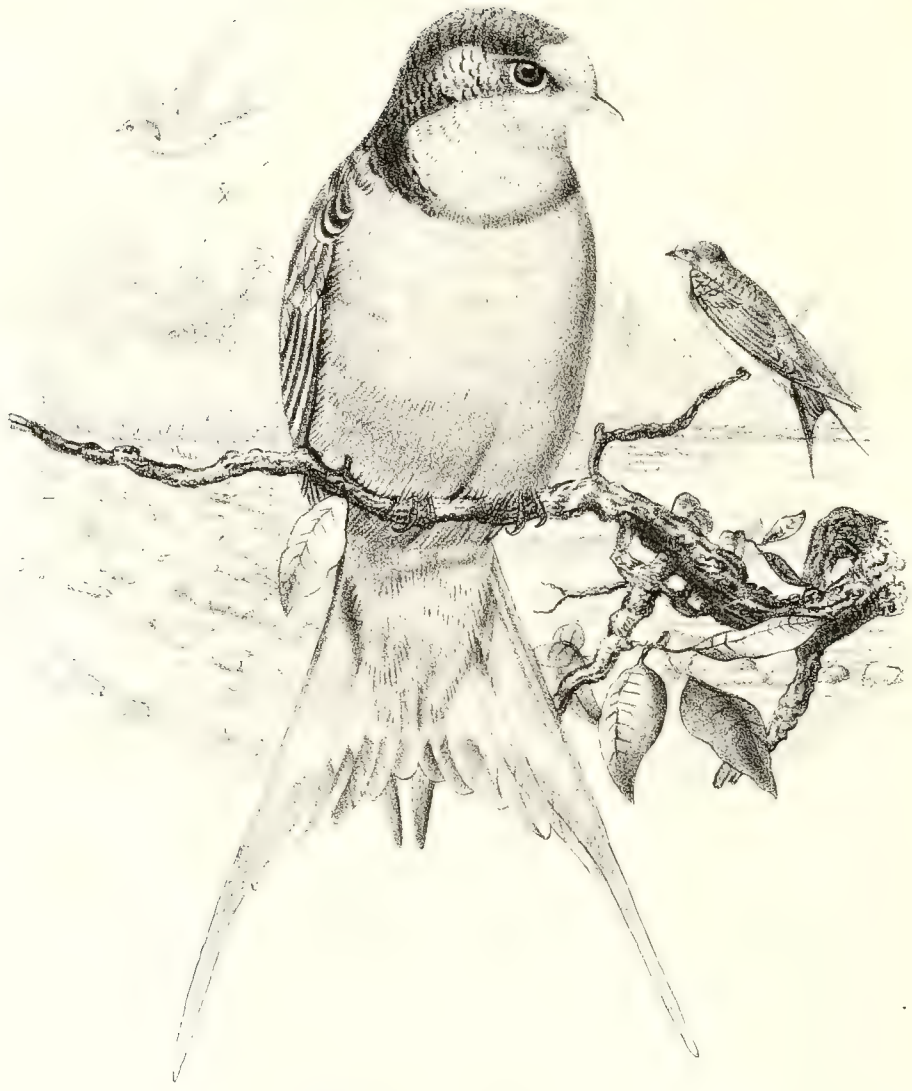
Count Salvadori has given a list of the different places in the Moluccas where this Swallow has been found by Wallace, Bruijn, Beccari, and Guillemard, as follows:—Batchian, Halmahéra or Gilolo, Tifore, Morotai, Amboina, Aru Islands, and Andai in N.W. New Guinea. Mr. H. O. Forbes has also met with it in Bourou. In the British Museum is a specimen collected by Mr. Cohen in the Pelew Islands.

During the voyage of H.M.S. 'Herald,' a specimen of a young male Swallow was captured by Dr. Rayner on the north coast of Australia, on the 18th of October, 1860.

Gould made this the type of his *Hirundo fretensis*, but, as has already been pointed out in the 'Catalogue of Birds,' this supposed species is identical with *H. gutturalis*.

No detailed account of the habits of the Eastern Chimney-Swallow has been published, but all notes agree, as might be expected, that its habits are precisely similar to those of the European bird.

The descriptions are taken from specimens in the British Museum, and the figure is drawn from a fine and typical adult bird procured by Professor Milne near Yokohama.



C.W.W. del.

Mintern Bros. imp

HIRUNDO TYTLERI.

HIRUNDO TYTLERI (*Jerd.*).

TYTLER'S CHIMNEY-SWALLOW.

Hirundo rustica, var. *rufa* (nec Gm.), Middend. Sibir. Reis. p. 188 (1851).
Hirundo rufa (nec Gm.), Kittl. Denkw. ii. p. 196 (1858).
Hirundo rustica (nec L.), Radde, Reis. Sibir. p. 278 (1863).
Hirundo tytleri, Jerd. B. Ind. iii. App. p. 870 (1864); Blyth, Ibis, 1866, p. 336; Gray, Hand-l. B. i. p. 68, no. 790 (1869); Hume, Str. F. iii. p. 41 (1875); Wald. in Blyth's B. Burm. p. 127 (1875); Wardlaw Ramsay, Ibis, 1877, p. 466; Hume & Davison, Str. F. 1878, p. 41; Hume, Str. F. 1879, p. 84; Simson, Ibis, 1882, p. 84; Godwin-Aust. t. c. p. 345; Oates, B. Brit. Burm. i. p. 304 (1883); Seebohm, Hist. Brit. B. iii. p. 171 (1883); Sharpe, Cat. B. Brit. Mus. x. p. 140 (1885); Hume, Str. F. xi. p. 26 (1888); Oates, Faun. Brit. Ind., Birds, ii. p. 278 (1890).
Hirundo gutturalis (nec Scop.), Tacz. Bull. Soc. Zool. France, p. 385 (1882); Dybowski, op. cit. p. 351 (1883).
Chelidon erythrogaster (nec Bodd.), Stejn. Proc. U. S. Nat. Mus. vi. p. 72 (1883).
Hirundo americana, Blakist. Ibis, 1876, p. 331; id. & Pryer, Tr. As. Soc. Japan, viii. p. 211 (1880).
Hirundo erythrogastra (nec Bodd.), Blakist. & Pryer, Tr. As. Soc. Japan, x. p. 139 (1882); Blakist. Amended List B. Japan, p. 47 (1884).
Hirundo saturata, Ridgway, Proc. U. S. Nat. Mus. 1883, p. 95 (ex Stejneger, MSS.).
Hirundo rustica saturata, Dybowsk. & Tacz. Bull. Soc. Zool. France, ix. pp. 146, 152 (1884).
Hirundo baicalensis, Dybowsk. & Tacz. t. c. p. 151 (1884).
Hirundo rustica baicalensis, Dybowsk. & Tacz. t. c. p. 152 (1884).
Chelidon tytleri, Stejneger, Bull. U. S. Nat. Mus. no. 29, pp. 269, 330, 346, 351, 352 (1885); id. Proc. U. S. Nat. Mus. p. 143 (1887).
Hirundo savignii (nec Aud.), Styan, P. Z. S. 1886, p. 268.
Hirundo rustica tytleri, Tacz. Mém. Acad. Imp. Sci. St. Pétersb. (7) xxxix. p. 180 (1891).

H. similis *H. gutturali* et torque pectorali interruptâ, sed gastræo vinaceo-castaneo distinguenda.

Hab. in Kamtschatkâ et in Siberiâ orientali, in terrâ Assamicâ, et in regione Indo-Chinensi hibernans. In Americâ meridionali quoque, ut videtur, rariùs hibernans.

Adult male. General colour above glossy purplish blue, the mantle and scapulars streaked with reddish white where the bases of the feathers show through; lesser and median wing-coverts like the

back; greater coverts and secondaries blackish, edged with the same purplish blue as the back; innermost greater coverts ashy on their inner web, tinged with rufous; bastard-wing, primary-coverts, and quills blackish, externally glossed with steel-green; tail-feathers blackish, glossed with steel-green, all but the centre feathers with a spot of pale rufous on the inner web, becoming larger towards the outermost, where it is in the form of a large oblique mark; frontal band deep chestnut; lores black; ear-coverts and sides of neck glossy purplish blue; cheeks and throat deep chestnut, with a half-collar of glossy purplish blue coming down on the sides of the fore neck, but not forming a band across; remainder of under surface of body bright chestnut, not so deep as the throat; the under tail-coverts equally bright chestnut like the breast, and having slightly indicated spots of purplish blue at the ends of the feathers; axillaries and under wing-coverts exactly like the breast, the coverts near the edge of the wing slightly mottled with ashy bases to the feathers; quills dusky below. Total length 7·8 inches, culmen 0·4, wing 5·9, tail 5·7, tarsus 0·4.

Hab. North-eastern Asia from Irkutsk to Kamtschatka, visiting Pekin and probably breeding there. Wintering in the lowlands of Dacca, the Burmese provinces, and Tenasserim, and even extending to South America.

Tytler's Chimney-Swallow bears the same relation to *Hirundo gutturalis* that *H. savignii* does to *H. rustica*. It is an intensely rufous bird without a perfect collar. We know that the species nests in Kamtschatka, and it has been said to breed in the hills of Assam and Manipur; but this statement is, in our opinion, erroneous.

We identify with *H. tytleri* specimens in the British Museum from the following localities:—Kamtschatka, Irkutsk, Sadhyia, Khasia Hills, Cachar, Dacca, Pegu, and Tavoy, as well as three American specimens from Brazil, Para, and Dueñas in Guatemala.

That all the specimens from the Indo-Burmese countries are typical *H. tytleri*, we would not, however, assert, for some of them incline to the possession of a throat-band, and both from Dacca and Tavoy we have seen specimens which we regard as intermediate between *H. rustica* and *H. tytleri*, while an individual from the Gurgaon district near Delhi appears to fall within the same category.

The northern range of Tytler's Swallow has been well discussed by Dr. Stejneger in his celebrated work on the ornithology of Kamtschatka and the Commander Islands, and he agrees that the rufous-breasted Swallow of these localities cannot be specifically distinguished from typical *H. tytleri*. In Kamtschatka, according to Dr. Stejneger, the "Brown-bellied Swallow," as he calls it, breeds abundantly in and about Petropaulowski, where he met with it during the months of June and July 1882. He adds:—"When, in 1883, I left the town on one of the latter days of May they had not yet arrived from the south, and at my arrival there in the middle of September the last one had already disappeared, so that their whole sojourn lasts less than three months. Mr. Joseph Lugebil informed me that the Swallows arrived on June 3, and disappeared on August 19. During the migration in spring a few stragglers sometimes pay a flying visit to Bering Island." Thus two were reported to Dr. Stejneger from the North Rookery on June 19, 1893, and another was observed at Ladiginsk three days later. A single egg left in the nest was procured in the fall; it was white, heavily spotted with lilac

and sepia-brown, resembling those of *H. erythrogastra* and *H. rustica*. Dr. Dybowski procured three nests with eggs near Petropaulowski, and Dr. Taczanowski describes the latter as similar to those of the European species with the same variations.

The present species has been considered as, at best, a variety of *H. rustica* and *H. gutturalis* by the Siberian explorers Middendorff, Schrenck, and Radde, and it is therefore difficult to determine the ranges of each species in their works. Dr. Stejneger has made some clever deductions, and shows that it is Tytler's Swallow which was found by Middendorff at Udskij Ostrog at the mouth of the Uda Valley, whence its migration to and from Lake Baikal and Dauria extends along the southern line of the Stanovoj Mountains.

The other references to the Siberian Swallows are very confusing, and we fancy that Taczanowski's ideas as to the two rufous-breasted Swallows, *H. tytleri* and *H erythrogastra*, are somewhat uncertain, and would have been revised if he had lived to publish his own book. He refers Middendorff's bird from Udskij Ostrog to *H. erythrogastra*, which he allows on the same authority to nest on the Yenesei. There seems to be a thorough muddle regarding these Siberian specimens, and the matter will never be cleared up till some competent naturalist re-examines the original specimens in the St. Petersburg Museum. This will doubtless soon be done by Dr. Pleske, but until then our surmises are likely to be incorrect.

Suffice it to say that an example from Irkutsk in the British Museum is identical in every respect with the birds from Kamtschatka, and doubtless the bird breeds in the former locality.

In China the present species has only been seen near Pekin, where Abbé David records having noticed specimens with peculiarly dark underparts, as well as in Upper Mongolia. The only authentic record, however, of the capture of a specimen of *H. tytleri* has been furnished by Mr. Styan, who describes two specimens killed near Pekin; and as a friend of his noticed several dark-coloured specimens, it is possible that Tytler's Swallow is not uncommon in the vicinity.

Tytler's Swallow was first described by Dr. Jerdon from Dacca, where it was first brought under his notice by that excellent naturalist Mr. F. B. Simson, who thus describes the discovery of the species :—

"In April 1863 I observed, for the first time, that a great number of Swallows flying about the low marshy land to the east of Dacca and near the river Lukya, which lies southward from Mymensing to Naraingunge, where it mingles with the numerous streams from Sylhet and the eastern outlets of the Ganges, had red bellies. No such bird was described in the first volume of Jerdon's 'Birds of India,' at that time the only work on Indian Birds published. I wrote to Jerdon about it, and he told me that the bird had been observed before by Tytler, and that he would enter it in an appendix, which he accordingly did under the name of *Hirundo tytleri*. Jerdon says they were abundant at Dacca in June, but were absent in October; I have, however, seen them near Dacca towards the end of October. I saw them in their greatest numbers in

November 1867. These birds were closely looked for by me for eight years in various parts of Eastern Bengal. I never found that they bred there; and it was very seldom that I observed them far from Dacca, and there only in very scanty numbers. I observed them at Mymensing, the next district to Dacca, once, but only for one day. They visited Dacca regularly, certainly twice every year, from the end of April to June, and again after the rains. They seemed only to stay a few weeks, and then to disappear. For months I had been looking out for them in vain; of a sudden they would appear in considerable numbers, and then disappear as suddenly."

Dr. Jerdon writes:—"I found this apparently new Swallow in abundance at Dacca in June. It had evidently finished breeding, for there were many young birds. It had entirely left the place in October." Mr. Hume, writing in 1875, says:—"It is a mystery where *H. tytleri*, which is only seen at Dacca for a month or two at a time and that often after an interval of some years, comes from. Mr. F. B. Simson, the late commissioner of Dacca, who first pointed out the species to Dr. Jerdon, watched vainly for them for three successive years; then they came in great numbers, and he sent me a very large series. A couple of months later they had entirely disappeared; this was in the early part of the rains. It was in June also that he first drew Dr. Jerdon's attention to them."

Colonel Godwin-Austen procured a Swallow in Manipur, which he found nesting near Imphal, the capital, in February and March; it was then commencing to breed. He has specimens in his collection from the Manipur Hills and the Lhoto Naga Hills, Assam, and he remarks:—"It would appear that this species breeds in the neighbouring hilly districts, migrating soon after into the plain country." He has kindly lent us these specimens for examination, and we find that they are only *H. rustica*, though rather highly-coloured individuals of that form.

Mr. Hume believes that he observed the species in Manipur, but did not procure a specimen. He writes:—"This is the more remarkable as Godwin-Austen says that during his visit it was the only form seen in Manipur during February and March."

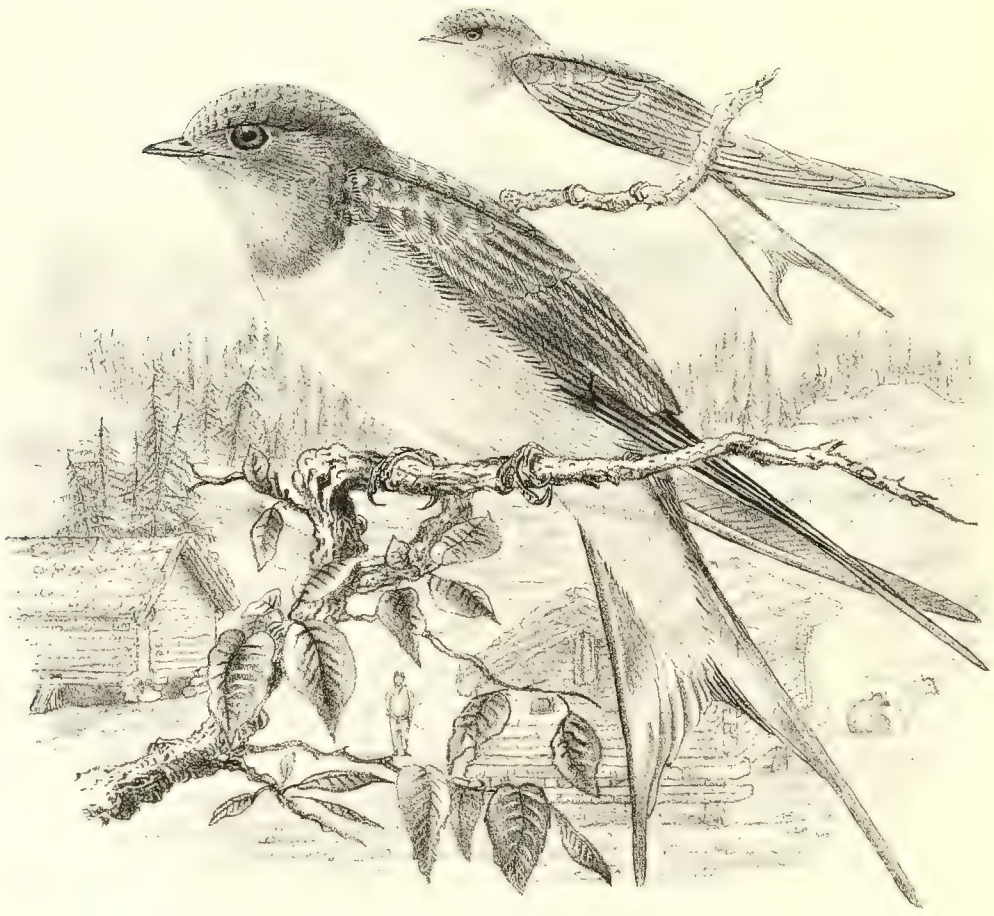
Mr. Oates writes:—"Tytler's Swallow visits British Burmah in considerable numbers every winter, but is much more common in some years than in others." Major Wardlaw Ramsay records it as common in the plains of Karennee, but no specimens from this locality are in the Tweeddale collection.

Mr. Davison says:—"I only met with this race at Tavoy; they appeared for a few days in the latter end of April and the early part of May in great numbers, and then disappeared entirely; but whether moving north or south I am unable to say."

Occasionally Tytler's Swallow appears to visit the American continent and to accompany *H. erythrogastra* in its migrations south. Three specimens, from Dueñas in Guatemala, from Para, and from Brazil, are referable to this form.

The description of the bird is taken from an Irkutsk specimen in the British Museum, and the figure has been drawn from a specimen from Petropaulowski in the same Institution.

For the geographical distribution of this species, *vide infrà* Plate 44 [Map].



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HIRUNDO ERYTHROGASTRA

HIRUNDO ERYTHROGASTRA, *Bodd.*

AMERICAN CHIMNEY-SWALLOW.

Hirondelle à ventre roux de Cayenne, Daubent. Pl. Enl. vii. pl. 724; Montb. Hist. Nat. Ois. vi. p. 607 (1779).

Rufous-bellied Swallow, Lath. Gen. Syn. ii. part 2, p. 566 (1783).

Hirundo erythrogaster, Bodd. Tabl. Pl. Enl. p. 45 (1783); Sclater, Cat. Amer. B. p. 39 (1862); Baird, Review Amer. B. p. 295 (1864).

Chimney-Swallow, Penn. Arctic Zool. ii. p. 429 (1785).

Hirundo rufa, Gm. Syst. Nat. i. p. 1018 (1788); Vieill. Ois. Amér. Sept. p. 60, pl. 30 (1807); Bp. Comp. List B. Eur. & N. Amer. p. 9 (1838); Gray, Gen. B. i. p. 57 (1845); Bp. Consp. i. p. 339 (1850); Cab. Mus. Hein. Th. i. p. 46 (1850); Cass. Cat. Hirund. Mus. Philad. Acad. p. 2 (1853); Reinh. J. f. O. 1854, p. 438; Burm. Th. Bras. iii. p. 148 (1856); Cass. B. Calif. p. 243 (1856); Brewer, N. Amer. Ool. p. 91, pl. 5. figs. 63–67 (1857); Reinh. Ibis, 1861, p. 5; Léot. Ois. Trinidad, p. 88 (1866); Lawr. Proc. U. S. Nat. Mus. i. p. 450 (1879).

Hirundo horreorum, Bartr. Fragm. Nat. Hist. p. 17 (1799); Baird, B. N. Amer. p. 308 (1858); Scl. & Salv. Ibis, 1859, p. 13; A. & E. Newt. t. c. p. 67; Lawr. Ann. Lyc. N. Y. vii. p. 317 (1861); Scl. Cat. Amer. B. p. 38 (1862); Blakist. Ibis, 1863, p. 63; Scl. P. Z. S. 1864, p. 173; Scl. & Salv. t. c. p. 347; Lawr. Ann. Lyc. N. Y. viii. p. 97 (1864); Baird, Review Amer. B. p. 294 (1864); Coues, Ibis, 1865, pp. 159, 537; Baird, Ibis, 1867, pp. 273, 275, 283, 289; Brown, Ibis, 1868, p. 420; Dall & Bann. Trans. Chicago Acad. i. p. 279 (1869); Gray, Hand-l. B. i. p. 68, no. 788 (1869); Sumichr. Mem. Bost. Soc. N. H. i. p. 547 (1869); Cooper, B. Calif. p. 103 (1870); Salv. P. Z. S. 1870, p. 184; Allen, Bull. Mus. Comp. Zool. iii. p. 176 (1872); Gundl. J. f. O. 1872, p. 431; Coues, Key N. Amer. B. p. 113 (1872); id. B. N.-West, p. 85 (1874); Maynard, B. Florida, p. 73 (1874); Lawr. Mem. Bost. Soc. N. H. ii. p. 271 (1874); id. Bull. U. S. Nat. Mus. no. 4, p. 17 (1876); id. Proc. U. S. Nat. Mus. i. p. 455 (1878); Baird, Brewer, & Ridgw. Hist. N. Amer. B. i. p. 339, pl. 16. fig. 9 (1874); Hensh. Rep. 100th Merid. p. 216 (1875); Sennett, Bull. U. S. Geol. Survey, iv. p. 14 (1878); Hume & Davison, Str. F. vi. p. 43 (1878); Cory, B. Bahamas, p. 78 (1880); Zeledon, Cat. Av. Costa Rica, p. 5 (1882); Oates, B. Brit. Burm. i. p. 303 (1883).

Hirundo americana (nec Gm.), Wilson, Amer. Orn. v. p. 34, pl. 38. figs. 1, 2 (1812); Swains. & Richards. Faun. Bor.-Amer., Birds, p. 329 (1831); Bp. Consp. i. p. 339 (1850); Lembeye, Aves Cuba, p. 11, pl. 7. fig. (1850); Leith Adams, Ibis, 1878, p. 423; Blakist. t. c. p. 386; Lawr. Proc. U. S. Nat. Mus. i. pp. 455, 487 (1879).

Hirundo cyanopyrrha, Vieill. N. Dict. d'Hist. Nat. xiv. p. 510 (1817).

Hirundo rustica (nec L.), Audub. B. Amer. fol. pl. 173 (c. 1826); id. Orn. Biogr. ii. p. 413 (1834); id. B. Amer. 8vo, i. p. 181, pl. 48 (1840); Jones, Nat. Berm. p. 34 (1859).

Hirundo fumaria, Licht. Preis-Verz. Mex. Vög. no. 58 (1830); Cab. J. f. O. 1863, p. 58.

Cecropis americana, Less. Compl. Buff. viii. p. 498 (1837).

Cecropis rufa, Less. Compl. Buff. viii. p. 498 (1837); Boie, Isis, 1844, p. 175.

Cecropis americana, Boie, t. c. p. 174.

Cecropis cyanopyrrha, Boie, t. c. p. 175.

Hirundo erythrogastra, Gray, Gen. B. i. p. 57 (1845); Scl. Cat. Amer. B. p. 39 (1862); Scl. & Salv. P. Z. S. 1867, p. 569; Pelz. Orn. Bras. pp. 18, 402 (1871); Layard, Ibis, 1873, p. 378; Scl. & Salv. Nomencl. Av. Neotr. p. 14 (1873); iid. P. Z. S. 1873, p. 185; Tacz. P. Z. S. 1874, p. 510; Coues, B. Color. Vall. p. 407 (1878); Hoffman, Bull. U. S. Geol. Survey, vi. p. 220 (1881); Stearns, New Engl. Bird-Life, i. p. 181 (1881); A. & E. Newt. Handb. Jamaica, 1881, p. 107; Bean, Proc. U. S. Nat. Mus. v. p. 148 (1882); Salvin & Godman, Biol. Centr.-Amer., Aves, p. 232 (1883); Tacz. Orn. Pérou, i. p. 238 (1884); Salvin, Ibis, 1885, p. 205; Drew, Auk, ii. p. 15 (1885); Beckham, t. c. p. 141; Agersb. t. c. p. 278; Anthony, Auk, iii. p. 170 (1886); Wells, Proc. U. S. Nat. Mus. v. p. 612 (1886); Berl. J. f. O. 1887, p. 5; Salvin, Ibis, 1888, p. 256; Oates, Faun. Brit. Ind., Birds, ii. p. 279 (1890); Feilden, Ibis, 1890, p. 483; Evans, Ibis, 1891, p. 61; Schalow, J. f. O. 1891, p. 254; Peters, J. f. O. 1892, p. 117; Graham Kerr, Ibis, 1892, p. 123.

Hirundo erythrogastra, β. *horreorum*, Ridgw. Rep. 40th Parallel, iv. p. 441 (1877); Belding, Proc. U. S. Nat. Mus. i. p. 408 (1879).

Hirundo erythrogastra horreorum, Coues, Bull. Geol. Surv. iv. p. 578 (1878); id. Check-list, p. 42 (1882); id. Key N.-Amer. B. 2nd ed. p. 322 (1884).

Hirundo rustica, var. *horreorum*, Merrill, Proc. U. S. Nat. Mus. i. p. 125 (1878); Cooper, op. cit. ii. p. 246 (1880); Seebohm, Hist. Brit. B. iii. p. 171 (1883).

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Hirundo rustica erythrogastra, Hartert, Kat. Vogels. Senckenb. Mus. p. 99 (1891); Tacz. Mém. Acad. Imp. St. Pétersb. (7) xxxix. p. 178 (1891).

H. similis *H. gutturali* et torque præpectorali eodem modo interrupto, sed gastræo pallide cervino distinguenda.

Hab. in Americâ boreali et in Siberiâ orientali æstivans, in regione Neotropicâ ferè totâ, et in subregione Indo-Burmanicâ hibernans.

Adult male. General colour above glossy purplish blue, varied with white on the mantle and back, where the white bases to the feathers show through; lesser and median wing-coverts like the back; greater coverts, bastard-wing, primary-coverts, and quills blackish, with a purplish-blue gloss on the outer web, inclining more to steel-green on the outer webs of the bastard-wing and primary-coverts; the innermost greater coverts ashy on their inner webs, with a strong rufous tinge; tail-feathers blackish with a steel-green gloss, all but the centre ones with a large rounded white spot increasing in size towards the outermost, where it is a large oblique mark; forehead deep bay or chestnut, extending slightly backwards over the eye; lores black; ear-coverts purplish blue like the head; cheeks and entire throat deep bay, of a different colour to the rest of the under surface, but not separated from the chest by a complete band; the sides of the neck glossy purplish blue like the back, this colour impinging on to the sides of the fore neck in a half-crescent-shape, but not forming a band across; under surface from the chest downwards, including the under wing-coverts and axillaries, clear rufous, deepening into chestnut in the region of the vent; the under tail-coverts with blackish shaft-lines; some of the lesser wing-coverts near the edge of the wing mottled with ashy-brown bases; quills ashy brown below. Total length 6·8 inches, culmen 0·35, wing 4·55, tail 3·45, tarsus 0·45.

Adult female. Similar to the male in colour. Total length 6·7 inches, culmen 0·35, wing 4·5, tail 3·25, tarsus 0·4.

Young birds are much duller in colour than the adults, being dusky brown above with a blue gloss; on the rump remains of narrow rufous margins; quills with narrow whitish edges at the tips; frontal band very small and pale rufous; throat also pale rufous; the rest of the under surface very light rufescent buff, deeper on the under tail-coverts; on the lower throat some remains of blackish mottlings, but not forming a cross band.

The young bird described is from Guatemala, and shows that, as in *H. rustica*, the plumage of the young gets completely bleached before it puts on the full spring dress in which it returns to its summer home. The remains of blackish markings on the lower throat indicate an approach to a complete band.

There would appear to be some considerable difference in the depth of the rufous colouring of the under surface, some specimens being so richly coloured that they can scarcely be distinguished from *H. tytleri*, but, as a rule, the rufous under surface has a more vinous tinge in the latter species.

Hab. Eastern Siberia in summer, visiting the Burmese countries in winter. Nearly the whole of North America in summer, wintering in South America.

The present species is distributed over nearly the whole of North America, and is an occasional visitor in South Greenland, according to Mr. Hagerup. Professor Reinhardt gives the following note:—"Nearly thirty years ago a specimen was obtained at Fiskenæsset by the late botanist Dr. Vahl, and sent to the Royal Museum. A second was shot at Nenortalik and procured for the Royal Museum in 1856. As far as I am informed, these two specimens are the only ones ever met with in Greenland."

In Labrador, Mr. L. M. Turner says that it breeds at Hamilton Inlet. It apparently extends across the northern part of America, as it is said by Sir John Richardson to breed within the Arctic Circle in May, and to leave early in August. He writes:—"When Fort Franklin was erected, on the shores of Great Bear Lake, in the autumn of 1825, we found many of its nests in the ruins of a house that had been abandoned for more than ten years. Towards the end of the following May the birds themselves made their appearance, and immediately commenced a survey of the different buildings; but the storehouses having been repaired, without reference to the poor Swallows, they found no entrance, and after lingering about their old haunts for a week, they flew off in search of other quarters. At Fort Chepewyan, lat. 57°, the Barn-Swallows have regularly, about the 15th of May, for a number of years, taken possession of their nests of mud and straw, constructed within an outhouse, and we observed numbers of them in the same month at Fort Good Hope (in lat. 67½°), the most northerly post in America." It has been found at Fort Rae, on the Great Slave Lake, but is said by Mr. Ross to be rare there. Mr. MacFarlane did not meet with the species in the Mackenzie River, nor does it seem to reach Point Barrow, as it is not included in the list of birds observed there by Dr. Murdoch.

Mr. Turner writes:—"The distribution of the Barn-Swallow in Alaska is well made out. It is a regular visitor to all littoral Alaska, as far along the northern coast as Unalakhlit in lat. 65° N., while in the interior it is found all along the immense Yukon River. Along the peninsula of Alaska it is sparingly found. It appears in scanty numbers at Iliuliuk, on Unalaska Island, and breeds there. During the spring of 1879 not one was seen at this place, neither were there any seen during the summer or fall. It was an exceptionally boisterous year, and a succession of gale after gale

possibly deterred the usually venturesome bird from coming there. This is the only species of Swallow found on any of the Aleutian chain proper and is not known west of the island of Unalaska. While at Atkha Island in 1879, and at Atlu Island in 1880 and 1881, I made special inquiry regarding this bird and only those persons who had visited Unalashka Island and had seen the bird there knew of its existence. The absence of knowledge of this bird in both of these places shows conclusively that neither the Barn-Swallow nor its congeners visit the islands in question. At Nushagak (Bristol Bay) the species is found in considerable numbers, and breeds there, as I saw a nest in June 1878." Mr. Townsend says that it was a common bird on the Kowak River in Northern Alaska, breeding there.

Mr. Nelson's note is as follows :—"(Esquimaux *Tū-lū-kŭgh-ŭ-nă-guk*) This bird is the most common and widely distributed of the Swallows throughout the north. In Alaska it is found along the south-eastern coast, extending thence over nearly the entire Aleutian chain, and north along the coast of the mainland to Kotzebue Sound, and thence east throughout the Territory wherever suitable situations occur. It arrives at St. Michaels from May 17 to 26, and leaves toward the end of August. At Port Clarence, in Bering Straits, Dr. Adams found them breeding in the summer of 1851. At Unalaska, June 2 and 3, 1877, I saw a number of these Swallows skimming about and over the village. Dall found them at various points on the Aleutian Islands, and they nest at Unalaska. The latter reports seeing a Swallow at Atkha Island, at the extreme western part of the chain, which was undoubtedly this species. About the middle of May they arrive at Nulato, where they breed, as they do also at Fort Yukon and the other fur-trading stations along the Yukon."

The late Dr. Adams gave the following note in a paper on the birds of Michalaski :— "Early on the morning of the 31st of May, 1851, eight or ten of these birds arrived at Michalaski. I had been wandering about the neighbourhood the whole of the previous day, and did not meet with one of them, so that they must have journeyed in a flock. They immediately set to work about repairing their old nests, which were placed in an outhouse, under the eaves of the buildings, and in some of the loopholes for musketry in the block-houses. When they find a horizontal surface on which to build, the nest is very slight and shallow ; but those under the eaves are large and well-built, very much resembling those of *H. urbica*, but open at the top. There were so many old nests that very few of them built new ones, merely repairing and relining the old ones. The nest is built entirely of mud lined with a thick bed of feathers. One pair that had been frequently disturbed whilst building in an exposed situation left their unfinished nest and built another in the root of a tuft of long grass which hung down from the inside of the roof of an outhouse. This one they concealed so artfully, by suspending long straws from its outer surface, that it was only by watching the birds that I discovered it. At the time of the arrival of these birds the weather was fine and warm, and their numbers were soon greatly increased; but in a few days the weather became cold and wet, and all the Swallows left off building. One pair left their half-finished nest, and built upon a rafter

close by it a large loose nest of straw and feathers, well lined with the latter (there was no mud), and partly arched over with straw. In this nest the two birds used to sit, side by side, the whole day long. As soon as the warm weather returned they left their warm retreat, and I never saw them use it afterwards. It was evidently built as a temporary resort during the cold weather, and it was the only one I saw; the other birds sat huddled together on the rafters. The favourite place for building was under the eaves of two outhouses which were only a few feet apart and the most noisy place in the redoubt, the constant resort of women, children, and dogs. They often build in old deserted native huts, and at Port Clarence, in lat. 65° 20′ N., the furthest north that they appear to go, they were breeding in a cliff at some little distance from the sea. Most of the nests had eggs in on the 19th of June, when my observations on them ended. They are said by the Russians not to leave until the middle of September."

Mr. Ernest Thompson sends us the following note:—

"*Distribution in Ontario*:

"*London and vicinity.* Always and everywhere abundant (*MS. of W. E. Saunders*).

"*Hyde Park.* Summer resident (*John A. Morden*).

"*Listowel.* Common (*W. L. Kells*).

"*Hatchly, Brant Co., Ont.* Occurs (*W. Yates*).

"*Hamilton.* Noted there by myself; given by T. McIlwraith, in his book on 'Birds of Ontario' (Hamilton, 1886), as follows:—'They arrive in Ontario early in May and are generally distributed over the country during the summer; but about the end of August they begin to move towards the south and soon have all disappeared.'

"*Toronto.* Noted by myself as follows:—'Common summer resident, breeding about barns and outhouses. In 1885 it first appeared April 30. On Sept. 12, while on Toronto Island, two miles south of Toronto in the lake, I saw a small flock migrating southward; two, apparently young ones, alighted on a building, and one, an old one I suppose, set about catching flies and fed them.' In 1887, Aug. 11, I find note: 'Barn-Swallows passing southward in flocks.' In 1888, April 20: 'Barn-Swallow arrived.'

"*Springfield, on the Credit River about* 18 *miles due west of Toronto.* In this vicinity and southward towards the lake the species is common. Here on the Lake shore is Lorne Park, where most of my specimens were taken.

"*Ellora.* Summer visitant, abundant (*Hon. C. Clarke*).

"*Bruce Co., Central region about Mildmay.* Summer resident, common (*W. A. Schoenau*).

"*Lindsay.* During my residence there ten years ago this species was abundant in the barns. It was protected by the farmers. We often found the Cliff-Swallow and the White-breasted Swallow nesting in the same barns with this species. During a heavy thundershower I have seen the whole colony of a barn fly forth in a flock and perch on a bare tree, there to sit in the drenching rain until the

shower was over; I suppose for the sake of the bath. This may be connected with the popular idea that Swallow-tenanted barns are safe from lightning, for the withdrawal of the Swallows during the storm when some barn has been struck may have engendered the idea of the thunderbolt being a consequence of their absence.

"*Coboconk.* During my visit there, in June 1885, I found the species common.

"*Peterboro'.* Common (*Rev. V. Clementi*).

"*Yarker, Addington Co.* Summer resident, April 17th to May 10th (*J. G. Ewart*).

"*Belleville.* In 1881, arrived May 9th (*Prof. J. Macoun*).

"*Kingston.* Common (*Dr. C. K. Clarke*).

"*Distribution in Province of Quebec*:

"*Montreal.* Summer resident, common (*W. W. Dunlop*).

"*Point de Monts.* Rare, and not known to breed. Mr. Comeau shot one, May 29, 1882 (*Dr. C. Hart Merriam*).

"*County of Quebec and North to Lake St. John.* Summer resident, abundant (*J. Neilson*).

"In the list of birds observed by Mr. Jos. M. Macoun at Lake Nustassini, this species is not mentioned.

"*Distribution in Manitoba and the North-west*:

"*Carberry.* Rare; in 1882 it arrived May 11th. Its absence remarked for same year on Aug. 30th. In 1884, first noted May 5th. The species did not breed about Carberry, possibly for lack of suitable nesting-places.

"*Winnipeg.* Abundant (*W. L. Hine*).

"*Eastern Manitoba* (*i. e.*, I understand, in neighbourhood of Winnipeg and the near east). Summer resident, abundant (*R. H. Hunter*).

"*South-western Manitoba, near Souris River.* I have it noted for this region as common.

"*Qu'Appelle.* Summer visitant, about May 20th, and breeds (*Geo. F. Guernsey*).

"*North-west* (by this I understand him to mean the region immediately to the west of Manitoba). Occurs (*Prof. J. Macoun*)."

Professor Elliott Coues, in his paper on the birds of Montana and Dakota, writes:— "I find no specimens of this species entered in my register from Pembina, where, according to my recollection, it was not breeding at the time of my visit, though the family was there well represented by numbers of Cliff and White-bellied Swallows. Nevertheless, Barn-Swallows were commonly observed during July and August at various points along the line, nearly to the Rocky Mountains. Eligible breeding-places for this species being few and far between in this country, it is correspondingly uncommon, at least in comparison with its numbers in most settled districts. A small colony of the birds which had located for the summer on a small stream west of the Sweetgrass Hills

afforded me an opportunity of observing a curious modification of their nesting-habits, which, I believe, had not been known until I published a note upon the subject. The nest was built in little holes in the perpendicular sides of a 'cut-bank,' whether dug by the birds themselves or not I could not satisfy myself, though I am inclined to think that they were. My assistant, Mr. Batty, seemed to feel quite confident in the matter; and the probability is, that if the holes were not wholly made by the birds, they were at least fitted up for the purpose."

Mr. Hoffman writes:—"Although a species of general distribution, its occurrence in many portions of Nevada has yet to be recorded. Mr. Ridgway found it most abundant around Pyramid Lake, while Dr. Cooper reports its passing Fort Mojave for the north during the last week in May. In the timbered hills south of Eureka, along a short range of cliffs, were found great numbers of Cliff-Swallows (*P. lunifrons*), who had constructed their nests in every available spot. Specimens were noticed amongst the latter supposed to be *H. erythrogastra*, but none were secured so as to definitely settle the question."

Throughout the greater part of the United States the Barn-Swallow appears to be a plentiful summer resident and breeds everywhere, and it is very common in the Eastern States, but, like most of the Swallows, is less abundant further to the northward. Thus Mr. Dwight speaks of it as a fairly abundant summer visitant to the Bras D'Or region, Cape Breton Island, while in Prince Edward's Island it was abundant and generally distributed in summer. Messrs. Brittain and Cox state that it was rare in the Restigouche Valley, New Brunswick.

On the Pennsylvania Alleghanies, Mr. Dwight found it common on the north mountain, where several pairs were nesting in the hotel barn. In Louisiania, Mr. Coombs found it fairly common only as a spring and autumn migrant. Mr. Beckham, in his list of the birds of Bayou Sara, says that the Swallow was several times seen but was not common.

Although only noticed as a migrant by Mr. Scott in the Caloosahatchie region, Florida, the same observer says that on the Gulf Coast it is a common spring and very abundant fall migrant. He adds that "a few are met with in warm days in the vicinity of Tarpon springs. Some few breed at or near the same point. Mr. Atkins's observations at Punta Rassa and Key West coincide with what I have written above, except that he has not observed the birds breeding, though he has seen them at Key West on June 11, and again on August 6–10, in numbers."

On the western side of North America we find that, according to Mr. John Fannin, the Swallow is an abundant summer resident in British Columbia, arriving at Buzzard Inlet at the end of March or the beginning of April. Dr. Robert Brown records the species from Vancouver Island; and at Gray's Harbour, in Washington county, Mr. Lawrence noticed the species on the 3rd of May. Mr. Anthony found it rather rare and says it is only seen for a few days in spring and fall; while at Fort Klamath, Oregon, Mr. Merrill speaks of it as common.

With regard to its appearance in Idaho, Dr. Hart Merriam says :—"Mr. Bailey saw one near the foot of the Black-foot Mountains, July 12, and found a pair breeding at the ranche at Big Butte. A few were seen nearly every day in August in Birch Creek and Lehmi Valleys. They breed at Scott's ranche, near Nicholia, and at the Lehmi Indian Agency. During the early part of July, 1872, I found Barn-Swallows in great numbers at Fort Hall."

Professor Coues writes :—"The Barn-Swallow occurs throughout the Missouri region, especially during the migrations, and breeds in suitable localities, although it is much less numerous than it is in most wooded and settled parts of the country. It appears to withdraw altogether from the United States in winter, though a few Swallows are usually among the earliest arrivals, in southern portions, even in February. Their great powers of flight enable them to pass rapidly from one country to another, according to the exigencies of the weather."

Mr. Henshaw says :—"The Barn-Swallow has a very general distribution throughout the middle region, but it appears to be nowhere very common. Specimens were secured both in Nevada and Utah at various points, most in close vicinity of settlements, where, secure in the protection of man, it builds its nest under the roofs and in the outbuildings. Individuals of the species were quite numerous at Fort Garland, Colorado, and Santa Fé, New Mexico, and also on the road between here and Fort Wingate, where they were seen by Mr. Newberry. This is the most southern point at which we have seen it. It has been detected in Arizona only at Fort Mojave by Dr. Cooper."

Dr. Cooper's note on the species in California is as follows :—"This well-known and beautiful bird is less abundant along the western than the eastern coast, its place being filled in great part by the *H. lunifrons*, and perhaps also because it does not find so many suitable places for building in. As settlements multiply they seem to be gradually increasing about farms near the coast, building in the barns, and living in perfect harmony with their cousins, which build under the caves. In wild districts they build in caves, which abound in the bluffs along the sea-shore, from San Diego to the Columbia River.

"Their nest is built of mud, plastered up against a rafter, or on some supporting shelf; it is cup-shaped, and lined with fine hay. The saliva of the bird is supposed to render the pellets of mud more adhesive. The eggs are five, white spotted with reddish brown, and they usually raise two broods in a season, but often leave the last to starve, in their sudden departure south in August or September.

"I noticed their arrival at San Diego, March 25th, and have found them far more frequent along the sea-coast than inland, probably from the fact that they prefer the vicinity of water, and delight to hunt insects over its surface, sometimes even touching it as they skim along. At Sacramento they were found by Dr. Heermann, and I have seen them near there as late as September 8th. They arrived at Santa Cruz March 21st, 1866, showing a remarkable regularity in comparison with 1862, though the latter was a much colder spring. They left Santa Cruz about September 15th."

Mr. Belding, in his paper on the birds of the Pacific District, gives the following list of the occurrences of the Swallow throughout the region :—

"*Soledad.* Rare summer resident, arrives about April 4 (*L. B.*).

"*San Diego.* One seen March 26, 1884. A few seen afterwards, especially after cool storms with snow in the neighbouring mountains; a few seen on April 8, 1885.

"*Poway.* Usually a common summer resident; none this spring, 1884 (*F. E. Blaisdell*).

"*San Bernardino.* Rare migrant in the valley (*F. Stephens*).

"*Santa Cruz Island.* Breeding (*Henshaw*); common summer resident, arriving in March (*Joseph Skirm*).

"*San José.* Common summer resident, arriving at the end of March and beginning of April (*W. L. Parkhurst*).

"*Alameda and Contra Costa Counties.* Tolerably common summer resident (*W. E. Bryant*).

"*Haywards.* Common summer resident, arriving in March (*W. O. Emerson*).

"*Berkeley.* Tolerably common summer resident, first arriving in March and April, common in May (*T. S. Palmer*).

"*Nicasio.* March 31, 1884, first seen (*C. A. Allen*).

"*Olema.* Common summer resident (*A. M. Ingersoll*).

"*Murphys.* March to September (*J. J. & J. P. Snyder*).

"*Stockton.* March 19, 1870, arrived and began to repair their old nests (*Dr. Hudson*); rare in 1885, arrived March 17 (*J. J. Snyder*).

"*Central California.* March to the beginning of October; breeding up to about 3000 feet (*L. B.*).

"*Soquel near Santa Cruz.* Nesting; Sept. 14, young half-fledged (*W. O. Emerson*).

"*Marysville.* Common summer resident (*W. F. Peacock*).

"*Sebastopol.* Common summer resident, arriving in March (*F. H. Holmes*).

"*Beaverton, Or.* Occasionally seen (*A. W. Anthony*).

"*Walla Walla.* Arrive in May; breeds (*Dr. Williams*).

"*Camp Harney, Bendire.* A few pairs breed about the buildings of the Post; they arrive about the same time (May 1), but remain much longer than the Cliff-Swallow, which leaves about the middle of August.

"Although inhabiting the same localities as the Cliff-Swallow, everywhere much less numerous. Several nests were found in caverns on the eastern side of the Ruby Mountains. It arrived at Carson, April 8, 1868 (*Ridgway*).

"*Cape Flattery Light.* Arrived May 7, 1885 (*A. Simpson*).

"*Whidley Island, W.I.* Arrived May 24, 1886 (*Lawrence Wessel*)."

The following note occurs in Dr. A. K. Fisher's memoir on the Death Valley Expedition :—"The Barn-Swallow was found nowhere common except in Owen's

Valley, California. It was first seen at Ash Meadows, Nevada, where two were noted, March 19. In the same State, Dr. Merriam saw one at Mount Magruder, June 8; one in Oasis Valley, June 1; a number in Pahranogat Valley, May 22–26, where it was doubtless breeding; and several near Bunkerville, in the Virgin Valley, May 7–8. He saw a single bird near St. George, in the Lower Santa Clara Valley, Utah, about the middle of May.

"Mr. Nelson saw it as a migrant on the divide between Panamint and Saline valleys, the last of May, and at the head of Willow Creek, in the Panamint Mountains, about the same time. He saw Barn-Swallows at the head of Owen's Valley in the White Mountains, at the head of Owen's River, and also in the Yosemite Valley. Mr. Stephens found it common all through Salt Wells and Owen's Valleys, and the writer found it common in the latter valley at Keeler, near Owen's Lake, and at Lone Pine, in June. At Keeler a male was noticed every day during our stay. He sat for hours on a wire in front of the signal-station, and produced a series of notes which were well worth the title of a song. The sounds were more or less disconnected, but the writer does not remember hearing so perfect a song from any Swallow, and, as Mr. Bicknell states ('Auk,' i. p. 225, 1884), the notes suggest those produced by the Marsh Wren."

Mr. Blake says that the Swallow is very common on Santa Cruz Island, California, and nests in caves there.

Mr. Anthony states that in South-western New Mexico the species was seen by him on one or two occasions at Apache and Deming; a few were nesting at the latter place, where large numbers were seen flying south as late as the 1st of October. Mr. Scott, in his paper on the birds of Arizona, writes:—"Common migrant throughout the region, and breeds rather sparingly in the Catalinas, at an altitude of 5000 feet. The species seems much more abundant as a fall than as a spring migrant. On October 12th, 1884, they were abundant in the Catalinas, at an altitude of 4000 feet."

In Western Texas, according to Mr. Lloyd, it is a common summer visitant, breeding about the settlements, and rearing two broods during the season. He found a nest with four eggs on the 1st of August, at Paint Rock, Concho County. Near San Antonio Mr. Attwater regards it is a common migrant; he has remarked it early in June, but has found no nest. Mr. Sennett did not notice the bird on the Rio Grande, but says on the 22nd of May, when the steamer was about opposite Galvaston, "several of the species flew about us, almost in our faces, sometimes alighting on the deck. They kept us company for hours."

Dr. Couch has recorded the present species from San Diego in Nuevo Leon in Mexico, and other localities are given by Messrs. Salvin and Godman, in the 'Biologia Centrali-Americana,' as follows:—Guadalajara and Tepic (*Grayson*), Guanajuato and Puebla (*Dugès*), Valley of Mexico (*White*), Plateau of Mexico (*Sumichrast*), Tehuacan and Tehuantepec (*Sumichrast*). They have also in their collections additional examples, sent during recent years by several travellers, of which the following is a summary:—Vaqueria, Nuevo Leon, May 17 (*F. B. Armstrong*); Huipulco (Tlalpam),

Valley of Mexico, April 23 (*Ferrari-Perez*); Coapa (Tlalpam), March 14 (*Ferrari-Perez*); Chimalapa (Tacubaya), April 24 (*Ferrari-Perez*); Las Vigas (Jalapa), Sept. (*Ferrari-Perez*); Sola and Juchatengo, Oaxaca, April (*M. Trujillo*); Tepic, June 4 (*W. B. Richardson*); Mesquite, Jalisco, July (*W. B. Richardson*).

The late Colonel Grayson found this Chimney-Swallow very abundant in May and June at Tepic, where it breeds under the roofs of houses, in the corridors, but it was only seen on the sea-coast in September and October, apparently migrating. According to Messrs. Baird, Brewer, and Ridgway, the species also breeds on the Plateau of Mexico, and Mr. Le Strange informed Messrs. Salvin and Godman that it resorts to the houses in the city of Mexico for this purpose. Mr. G. F. Gaumer has obtained it in Ruatan and Cozumel in April. Messrs. Salvin and Godman further remark in the 'Biologia':—"In Guatemala we only know it as a migrant, arriving as early as the first days of September, and leaving again in April; but in the former month adult birds are to be seen with young ones in their first plumage. The only record we have of its occurrence in Costa Rica is from its name being included in Mr. Zeledon's list of the birds of that country. From the State of Panama, however, we have many skins of both adult and young birds. The latest spring record we have of the appearance of this Swallow in this district is the 7th of May, when a bird was seen at sea by Salvin about 100 miles from Colon."

Mr. Cory records the species from the following islands in the Bahamas:—Maraguana; Little Inagua; Great Inagua; Cay Sal; Anguilla. In the Greater Antilles, according to the same authority, it occurs in Cuba, Grand Cayman, Cayman Brac, Jamaica, Porto Rico, and St. Croix. In the Lesser Antilles it has been observed in St. Bartholomew, Guadeloupe, Grenada, and Barbados. Sir Edward Newton, in the paper written by himself and Professor Newton on the birds of St. Croix, gives the following note:—"I observed two individuals of this species for the first time, Sept. 13, 1858, and I continued to see some almost daily up to my departure from the island on the 28th of that month. They were generally hawking after the manner of our own familiar bird *H. rustica*, and, I think, could hardly be distinguished from it on the wing. On one occasion I saw several hundreds flying over a lagoon, intending probably to pass the night in the thick mangroves on its margin. From what I could learn, they do not winter in the island, nor are they seen there on their passage northwards in spring."

Colonel Feilden states that in Barbados it is "an annual and abundant visitor, arriving in the end of August or the beginning of September, and some remaining till February; they haunt the meadows near the shore. On the 10th of September I observed them at Chancery Lane flying by scores, both old and young. I have also many notes of having seen them in numbers in other parts of the island as late as December."

Mr. Hartert writes with regard to its occurrence in the island of Curaçao, where it had also been obtained by Mr. Peters:—"I saw a specimen which had been obtained by Herr Ludwig which undoubtedly belonged to this species. I think it is only a

visitor from the north, because Peters tells us that it was numerous at the end of August, while it was so rare during my visit that I only saw a few in the town, and was not able to procure a specimen." Cassin mentions a specimen from Cayenne in the Philadelphia Museum, and the late Mr. Henry Whitely procured a specimen at Bartica Grove, in British Guiana, in April, and met with it on Roraima at 3500 feet. He also procured a specimen at Aunai in March.

Mr. E. L. Layard observed the species at Para, but only in the town, where it kept about the church-towers. Natterer procured four specimens at Marabitanas in April. Three specimens were procured by Mr. H. H. Smith at Corumba, in Matto-Grosso, on the 23rd of March. Professor Baird records two specimens from the Vermejo River in Paraguay. It is not included in Sclater and Hudson's 'Argentine Ornithology,' but Mr. Graham Kerr says that during the expedition to the Lower Pilcomayo he observed immense numbers of this Swallow at Puerto Juarez Celmen, on the Rio Paraná, opposite Corrientes. Dr. Rohde obtained two young birds on January 12th; and Count von Berlepsch seems to hint that the species may breed in Paraguay, but this is not likely to be the case, in our opinion.

The Philadelphia Museum possesses a specimen from Bolivia, and the late Mr. Henry Whitely procured specimens at Cosnipata in Peru, and Dr. Taczanowski says that he has received numerous specimens from the vicinity of Lima.

Dr. Taczanowski also says that the American Chimney-Swallow is spread over the greater part of Eastern Siberia, and is common in the neighbourhood of Irkutsk, on Lake Baikal, and over the whole of Dauria; according to Mr. Godlewski it arrives in the latter country during the latter part of May, and migrates towards the end of August. Dr. Radde gives a full list of the dates on which he observed the species in the Baikal country, where he says that the second broods sometimes remain till the beginning of September. We do not reproduce the whole of his note, as considerable doubt exists as to the correct determination of the Swallows in Eastern Siberia.

In the 'Catalogue of Birds' we identified some specimens from Burmah and Cochin China as being identical with the true *H. erythrogastra* from North America, and we are glad to see that Mr. Oates confirms this identification. He writes:—"The only specimens of this species I have seen within Indian limits are two procured by myself in February, one at Toungoo and one at Pegu. The former is adult and the latter young. There are two typical adult specimens from Cochin China in the British Museum."

In its habits the American Chimney-Swallow resembles the species of the Old World. One of the best accounts of the bird appears to be that of Professor Elliott Coues in the 'Birds of the Colorado Valley':—"In the case of this Swallow, whose name is a 'household word' alike with the learned and the ignorant of ornithology, it is unnecessary to rehearse the items which have formed staples of biography since Wilson wrote truly 'that the light of heaven itself, the sky, the trees, or any other common objects of Nature, are not better known than the Swallows. We welcome their first appearance with delight, as the faithful harbingers of flowery spring and ruddy

summer; and when after a long, frost-bound, and boisterous winter we hear it announced that "the Swallows are come," what a train of charming ideas are associated with the simple tidings.' But almost all the written history of the bird has the savour of home: we think of Swallows and the city street, the farmyard, the bursting barn, the new-mown hay, the flocks and herds, and all the changes of the seasons that come to us when comfortably housed—forgetting, perhaps, the trackless waste of the West, where Swallows are still as wild and primitive as any birds, bounden by no human ties and no associates of civilization. Let us see the Swallow as he was before there were houses in this country—as he still remains in some parts of the world; we shall find him living in caverns, like the primitive cave-dwellers of our race; in holes in the ground, like the foxes of Scripture; in hollow trees, like the hamadryads of mythology —so lowly is the habitation of this winged messenger of the changeful seasons. And yet, no sooner does the sound of the woodman's axe in the clearing foretell the new day, than the twitter of the Swallow responds like the echo, and the glad bird hastens to fold his wings beneath a sheltering roof.

"Along the parallel of 49° I occasionally observed Barn-Swallows at various places from the Red River of the North to the Rocky Mountains, during July and August of 1873–74. Excepting at Pembina, Dakota, where, however, I do not think that any of these Swallows were breeding among the numbers of Eave and White-bellied Swallows that I saw during my visit, there were no human habitations for the birds to occupy; and as eligible breeding-places were few and far between, Barn-Swallows were comparatively rare. A small colony which had settled along the stream near Sweetgrass Hills gave the opportunity of observing one of the many modifications of their breeding-habits. Here the nests were built on the ground, in little holes and crevasses in the perpendicular face of a cut-bank. I could not satisfy myself that the holes were dug by the birds, though my assistant thought so; but they were probably refitted for the reception of the nests.

"Ridgway found it most abundant about Pyramid Lake, Nevada, where it nested among the tufa-domes, each nest being attached to the ceiling of a cave among the rocks, and each cave having generally but a single pair. He also found nests in caverns of the limestone-cliffs on the eastern side of the Ruby Mountains; and others elsewhere, attached, as usual, in the East, to rafters of buildings. These 'tufa-domes,' as described by the same writer, are rocks of remarkable form and structure, usually having rounded or domed tops, being thickly incrusted with calcareous tufa, and honey-combed beneath with winding passages and deep grottoes, in which various birds nested, such as the Burion, Say's Pewee, and the Barn-Swallow. Various other advices which we have from the West, particularly from the Pacific coast, attest that this Swallow is primitively a troglodyte, or cave-dweller; and even in the East we have similar evidence in the 'Swallow Cave' at Ushant, which Dr. Brewer mentions as once a favourite resort. In thus rehearsing the nestings of the Barn-Swallow, aside from its now habitual choice of rafters, I may finally note that it sometimes takes forcible possession of the nests of

other species, for Mr. Allen has known a pair to turn Cliff-Swallows out of doors, and occupy the premises.

"I suppose I hardly need describe the nest itself—an object as familiar to most persons as a cobweb or a pitchfork—an untidy mass of raw material, fresh from the bosom of mother earth, with 'hay-seed in the hair,' and a smell of the stable, like the typical Granger himself. These nests are composed ordinarily of little pellets of mud stuck together in layers, with hay intervening; for these birds have never learned it seems 'to make bricks without straw,' like their more ingenious cousins of the eaves. Outside, the hay hangs unkempt; inside these stout adobe walls there is a good soft stuffing of fine grasses, and a thick warm bed of feathers. The nests vary endlessly in size, shape, and degree of finish, according to the character of the site selected, the kind of materials most available, the facility of gathering them, and doubtless also the stress of impregnation under which the female may be labouring.

"One point about this Swallow's nest-building, however, may not be generally known. I give it in the words of our respected friend Dr. Brewer, with whose life-long observation of our birds I have too frequent occasion to differ:—'A striking peculiarity of these nests is frequently an extra platform built against, but distinct from, the nest itself, designed as a roosting-place for the parents, used by one during incubation at nights or when not engaged in procuring food, and by both when the young are large enough to occupy the whole nest. One of these I found to be a separate structure from the nest, but of similar materials, three inches in length and one and a half in breadth. The nest had been for several years occupied by the same pair, though none of their offspring ever returned to the same roof to breed in their turn. Yet in some instances as many as fifty pair have been known to occupy the rafters of the same barn.'

"Under ordinary circumstances these Swallows raise more than one brood each year, and usually four, five, or six are a nestful. Notwithstanding the notorious regularity of their migration, their breeding is rather an arbitrary matter, and it is not uncommon to find at the same time nests containing fresh eggs and others with fledglings. At this season, the activity of the parents is at its maximum, and their energy is taxed to supply voracious throats with insects captured on tireless wings. The rate of speed in flying, the distances traversed in a given period, and the numbers of insects destroyed, have all been the subjects of some curious calculations,—or rather speculations, for these matters scarcely admit of mathematics. Wilson supposed a Swallow to fly about a mile a minute, for ten hours a day, for ten years,—equivalent to more than eighty-seven times around the world! However this may be, let us trust that these matchless wings may bring the Swallows again next year, as they have this; and let us look leniently, even encouragingly, upon the various superstitions of folk-lore, which tend to protect and foster these amiable, these charming and useful creatures—even though we may not fear that to kill them is to make the cows give bloody milk!"

Mr. L. M. Turner gives the following interesting note on the species in Alaska:—"The Barn-Swallow arrives at Saint Michael's about the 7th of June. A few of the

more intrepid ones may arrive some few days earlier. By the 15th of the month as many as forty pairs have been counted in the dusk of the twilight, which is light enough to see to read by at midnight during this season of the year. The earliest arrivals dart into the usual places occupied by them as though they were the identical birds hatched there the preceding year. On their arrival they are loud in the manifestations of joy for the termination of the long journey lately winged to the distant north.

"In the spring of 1876 snow-squalls and frosty weather held until late in June. The poor birds had had no opportunity to recover their exhausted condition, resulting from their long flight. Many of them succumbed to the chilling weather, while others, benumbed by the cold, permitted themselves to be handled and seemed to enjoy the warmth given out by the hands, as they nestled closely between them, without evincing any fear.

"They build their nests on the beams projecting from the old houses and under the eaves of the other buildings. Nidification begins as soon as the sun thaws the ground sufficiently to allow them to obtain the mud with which to construct their nests. After that the yard is searched for feathers with which to line it. At this season of the year many game birds are killed for food; hence the yard has various kinds of feathers in abundance. The Swallows appear to delight in picking up a feather, carrying it high in the air, and drop it to catch it again as it flutters downwards. Oftentimes two or more Swallows will join in playing with a large feather, from the breast of a Swan. I have seen one Swallow chase another, which was carrying one of these large feathers, snatch it from him, only to be followed in most wonderful aerial evolutions by the one from which it was taken. This sport continues for an hour at a time.

"The Russians protected this bird; hence it seems to have less fear of man in that region than in warmer climates.

"My window was a favourable situation from which to observe these birds collect mud for their nests. I never before knew how it was done, but supposed that they picked the mud-pellets up between their beaks. I have watched them for hours at a time, and when my eyes were not four feet distant from the birds at work. They flew to the puddle of water and mud, stepping over the ground until they found a place having the proper consistency, when they would look up at me as if to say that this would do. The neck is stretched out to nearly its full length and the head kept with the bill at a right angle to the neck. A slight pressing of the beak into the earth and a tugging twist of the body gently pulls towards the bird a small pellet of mud. The bird then lowers its neck to the ground with the beak on the opposite side of the pellet (or on the side next the bird). The beak is now thrust under the pellet until the mass of mud is pushed on to the top of the bill and rests against the forehead. This is the manner in which it obtains the mud and is in position to enable the bird to deposit it. The mud is also plastered on with the top of the beak.

"The Swallow frequently rears two broods in a single season. The first brood is fully fledged and on the wing by the 15th of July. The second brood is ready for flight by the 25th of August. They remain around the Redoubt until the 18th or 20th of

September. Previous to their departure they assemble on the buildings, in the evenings and the early morn, filling the air with their twitter. The late young are sometimes not ready to undertake their long journey, but the older birds gather round them and actually push them from the building to make them fly, as they seem to fear to trust themselves to their wings.

"Their arrival in spring is always welcomed by the people who live in the Redoubt, while in the fall some will remark: 'It has been some time since I saw a Swallow.' Each person fully understood the thought that occupied the other's mind during the momentary silence that followed the remark. It meant that winter was near; how will it be, and what shall we do?"

Mr. E. W. Nelson also writes:—"Before the advent of the fur-traders these birds nested in the deserted huts of the natives, as, in fact, they do, in many instances, at present, and sometimes they even share with their owners the summer-houses on the Lower Yukon. On the north coast of Kotzebue Sound, in the autumn of 1881, I found two nests of these birds in a large cleft of the rocks, into which the waves beat. Their nests were seen in deserted huts on the same shore.

"This Swallow arrives as soon as mild spring weather sets in, generally from the 18th to the 23rd of May. The sea is still covered with an unbroken surface of ice as far as the eye can reach, and winter appears to be hardly gone when the first arrivals reach Saint Michael's and come fluttering about their former nesting-sites. Those whose nests were in the old outhouses, the windows of which are left open in summer, but are now closed, try vainly to enter and flutter just before the glass, until exhausted and driven to perch on the roofs of the buildings, or upon an adjoining fence. Within a few days they are seen glancing all about the place or gliding in wide circles over the brown tundra, which at this time is still marked here and there by heavy snow-drifts. Their arrival may be followed by frosty nights, and even snow-squalls are by no means rare, while raw misty rains are common. Still the birds appear to endure the unpleasant weather without harm, and shelter themselves in old nests or other places until the sun shines once more. These old nesting-sites are re-occupied after being repaired, and all manner of sheltering nooks are chosen as building-sites for the new-comers. Usually a number of pairs raise two broods in a season, if autumn does not come too early. When August arrives young and old are seen sunning themselves in noisy parties upon the low roofs of the log-houses, which form a favourite chattering-place. Day by day passes in teaching the young the use of their uncertain wings, and sad work some of them make of it at first, affording amusement to the dwellers of the houses. Before long, however, they fly as well as the old ones, and some fine morning we wake to find a blank in place of the vivacious throng, that, like many another source of pleasure, is not fully appreciated until lost. The sky seems to assume a sadder and more dreary aspect, the brown earth looks duller, and the presence of a gloomy autumn is made more apparent by the cheerless silence. Many days shall not pass before the snow-capped hill-tops, like the tents along the coast, announce the rapid approach of a long wearisome winter. Occasionally a pair have their unfledged young still in the nest, or just com-

mencing to take flight, at the time the other birds leave for the south, and I have known a pair or two to remain a week or so behind the main migration in order to prepare their young for the journey before them. But this is uncommon, the nesting being usually ended and all the young on the wing about the same time. Their first eggs are laid on the last days of May or first of June."

Mr. Stearns, in his 'New England Bird-Life,' gives a note on the Swallow in the Eastern States:—"A common summer resident, especially in populated places. The regular return of the Swallows occurs in April, and usually during the latter part of that month; but the time is very variable, depending much upon the weather, and individuals may sometimes be observed in March, or even in February. Such instances, however, no more represent the normal migration than 'make a summer.' The return movement is in September, and rather early than late in that month, but largely determined by the weather, as in spring. The Swallows are very assiduous in their household affairs, nesting for the first time usually by the middle of May, rearing another family late in June, and sometimes managing to dispose of a third before the end of the summer—using, if not making, much hay 'while the sun shines.' The well-known nest of pellets of mud lined with hay and often also with feathers is placed upon the rafters or under the eaves of a barn or other building, which serves these accommodating birds in good stead of the holes in trees they used to occupy before the country was settled. The eggs are three to five or six in number."

The following note on a curious nest was contributed by Mr. Hugh M. Smith to the 'Auk' for 1886:—"A nest of the Barn-Swallow having no mud or dirt in its composition may be something of a curiosity. Such a nest was found by me on Cobb's Island, Virginia, July 7, 1884, under the eaves of the porch of the main house in the settlement. It was rather compactly made up of rootlets and grass, and was thickly lined with downy chickens' feathers. It was four and a half inches in diameter and one inch in depth. In it were four newly laid eggs. The writer is wholly at a loss to account for this departure from the usual style of architecture adopted by the Barn-Swallow; there was certainly no dearth of mud out of which to construct a nest of the more approved type."

We are indebted for the following note on the bird in Canada to Mr. Ernest Thompson, who has sent us much useful information regarding the Swallows of North America:—

"Dr. Wm. Brodie, of Toronto, relates to me the following:—He was on one occasion teasing a large Polyphemus moth to make it fly; at length it started away, flying straight upwards. It had attained a considerable elevation when a Barn-Swallow came dashing over; it seized the moth and went on, and immediately afterwards the wings of the insect came fluttering down. The question is, how were they detached? there is no reason to suppose that the feet were used to assist the bill."

The descriptions of the species are copied from the British Museum 'Catalogue of Birds,' and the figures in the Plate represent an adult and a young bird drawn from specimens in the Salvin-Godman collection in the British Museum.

For the geographical distribution of the present species, *vide infrà*, Plate 43 [Map].

GEOGRAPHICAL DISTRIBUTION

←→ Migratory.

←/→ Bird of passage.

←⊖→ Remains locally during the winter.

←Δ→ Transplanted.

←*→ Winter resident.

Δ Ac

◯ Pe

◯◯ Ch

∼ Vi

≈ Ac

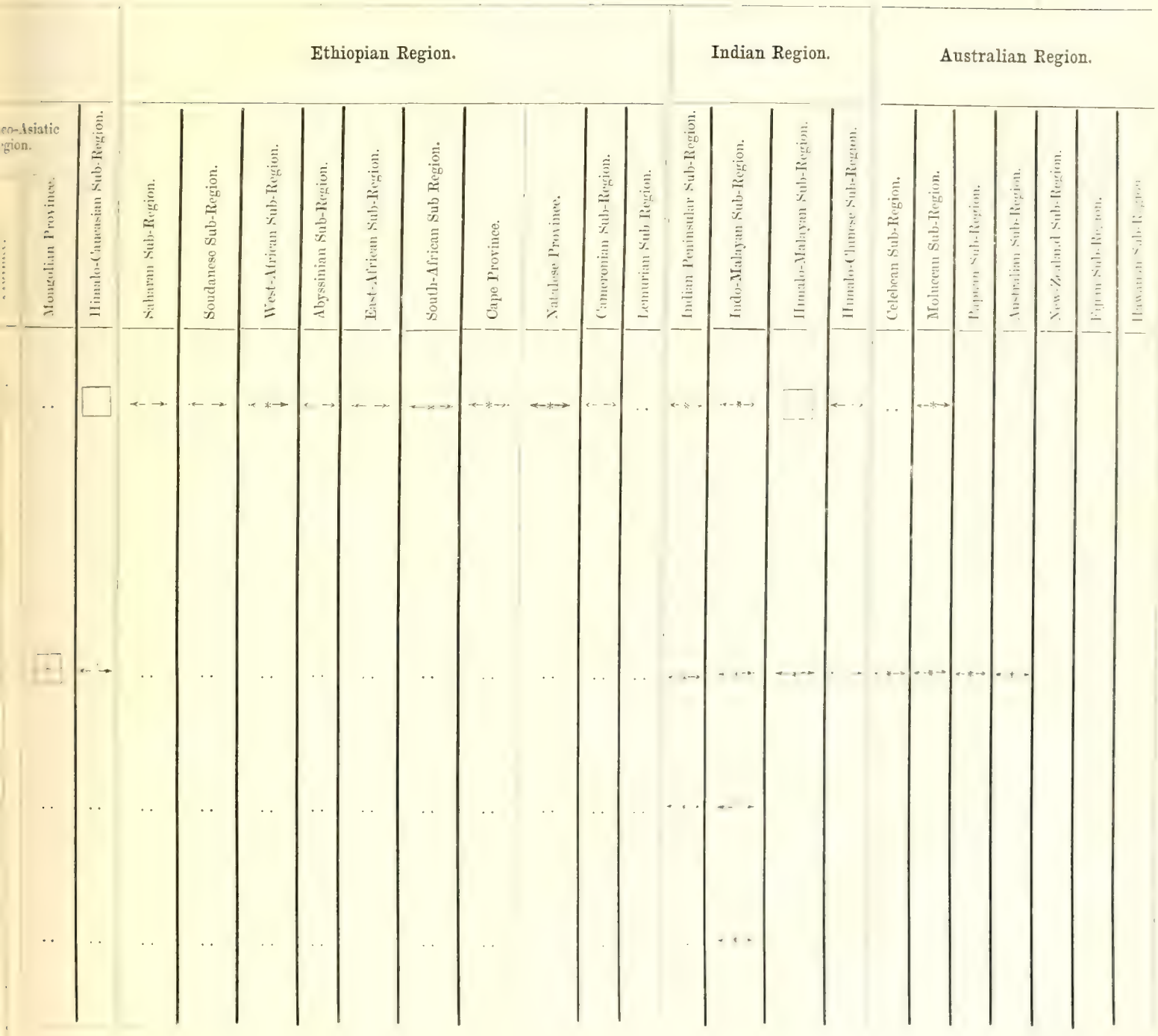
	Nearctic Region.										Neotropical Region.							Eurasian Sub-Region.			
	Arctic Sub-Region.		Cold Temperate Sub-Region.				Warm Temperate Sub-Region.				Antillean Sub-Region.	Central American Sub-Region.		Sub-Andean Sub-Region.	Amazonian Sub-Region.	Brazilian Sub-Region.	Patagonian Sub-Region.	Arctic Sub-Region.			
							Humid Province.		Arid Province.												
	Arctic Province.	Alaskan Arctic Province.	Hudsonian Province.	Canadian Province.	Sitkan Province.	Aleutian Province.	Appalachian Sub-Province.	Austro-Riparian Sub-Province.	Campestrian Sub-Province.	Sonoran Sub-Province.		Mexican Province.	Isthmian Province.						European Province.	Central Siberian Province.	East Siberian
1. *H. rustica*	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	□	⊞	⊞	..
2. *H. savignii*	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
3. *H. gutturalis* ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	⊞
4. *H. tytleri*	..	..	..	..	..	..	..	..	..	..	..	..	←*→	..	..	←*→	..	..	..	..	⊞
5. *H. erythrogastra*	□	⊞	⊞	⊞	⊞	⊞	⊞	←/→	⊞	⊞ ←/→	←/→	⊞ ←/→	←/→	←*→	←*→	←*→	..	..	..	..	⊞

OF THE GENUS HIRUNDO.

V Guest.

† Wanderer.

Rarely
Generally
In colonies
} nesting.



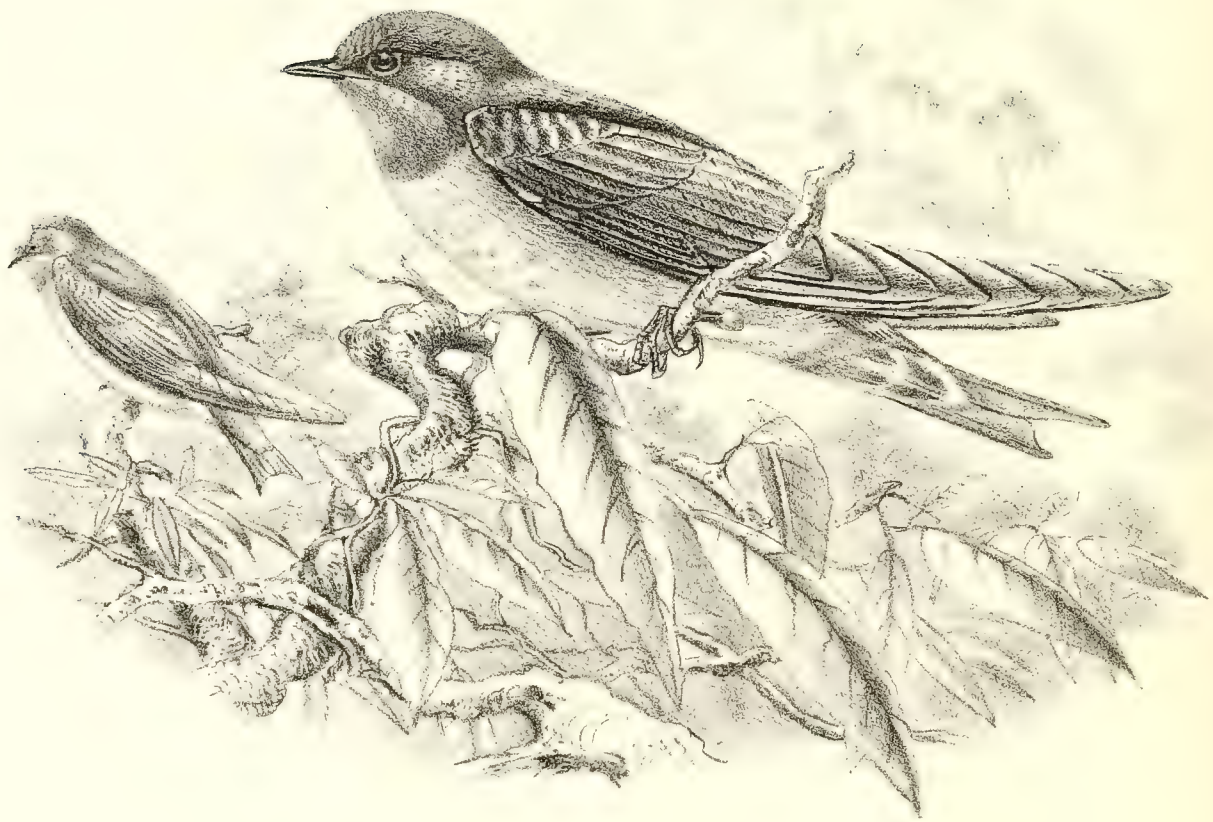


P. barbatica.
P. madagascariensis.
P. bicazza.
H. rustica.
H. rustica, breeding-range.
H. erythrogastra.
H. erythrogastra, breeding-range.

THE WORLD
ON MERCATORS PROJECTION


ARCTIC OCEAN
ARCTIC OCEAN
SPITZBERGEN
Jan Mayen
Arctic Circle
ICELAND
LAPLAND
SWEDEN
NORWAY
EUROPE
RUSSIA
SEA OF KARA
NOVA ZEMLA
SIBERIA
EMPIRE
Bennett I
C Chelinskin
NEW SIBERIA
Lakow I
Wrangel I
Behring Sea
Gulf of Amoor
SEA OF OKHOTSK
Aleutian Islands
ASIA
CHINESE TARTAR EMPIRE
CHINESE EMPIRE
Baikal
Pekin
Nankin
Yellow R
Sea of Japan
NIPHON
Hakodadi Is
Loo Choo I
Bonin Is
Tropic of Cancer
SANDWICH ISLANDS
Honolulu
Hawaii
Formosa
Canton
Hoonan
Philippine Is
Manchooan I
Marshall Is
PACIFIC OCEAN
CAROLINE ISLANDS
Pellew Is
Celebes Sea
Equator
Gilbert Is
New Ireland
New Britain
SOLOMON Is
GUINEA
JAVA
SUMATRA
BORNEO
CHINA SEA
SIAM
BURMAH
Bay of Bengal
Calcutta
Madras
Bombay
Surat
Delhi
THIBET
TURKEY
PERSIA
ARABIA
Great Desert
Mecca
Medina
Red Sea
EGYPT
MOROCCO
ARABIAN SEA
INDIAN OCEAN
SOUTH ATLANTIC OCEAN
Fernando Po
Zanzibar
St Paul de Loanda
Benguela
Cape Town
CAPE of GOOD HOPE
Port Natal
MOZAMBIQUE
Madagascar
CORAL SEA
AUSTRALIA
Brisbane
Sydney
Melbourne
Adelaide
Port Phillip
TASMANIA
NEW ZEALAND
Auckland
Wellington
Chatham I.
Port Chalmers
Stewart I.
Auckland I
New Hebrides
Friendly Is
Fiji Islands
New Caledonia
Tropic of Capricorn
Marquesas
SOUTH PACIFIC OCEAN
Valparaiso
Juan Fernandez
Lima
Guayaquil
Galapagos I.
Panama
Guatemala
CARIBBEAN SEA
Trinidad
R. Orinoco
R. Amazon
R. Para
Pernambuco
Ascension
R. San Francisco
BAHIA
BRAZIL
SOUTH AMERICA
Rio Janeiro
Monte Video
R. de la Plata
Falkland Is
Str of Magellan
Terra del Fuego
CAPE HORN
New Orkneys
NORTH AMERICA
GREENLAND
PARRY ISLANDS
MELVILLE SOUND
Baffins Bay
DAVIS STRAIT
ICELAND
Mackenzie Bay
Esquimaux
Barrow
ALASKA
TERRITORY
NORTH
HUDSONS BAY
Sitka
Slave L
VANCOUVER
UNITED STATES
CANADA
San Francisco
New York
Bermudas
Hatteras
TEXAS
FLORIDA
GULF OF MEXICO
MEXICO
CALIFORNIA
Bahama I.
Cuba
St Domingo
Jamaica
Honduras
NORTH ATLANTIC OCEAN
Azores
Madeira
Canary Is
C Verd I
C VERD
S LEONE
H. savignii.
H. tyleri.
H. tyleri, breeding-range.
H. tahitica.
H. javanica.
H. namiyei.
H. neoxena.
THE WORLD
ON MERCATORS PROJECTION
Antarctic Circle
0 20 40 60 80 100 120 140 160 180 160 140 120 100 80 60 40 20 0


ARCTIC OCEAN
SPITZBERGEN
Jan Mayen
Arctic Circle
IRELAND
LAPLAND
SWEDEN
NORWAY
EUROPEAN RUSSIA
SEA OF AZOF
SIBERIA
EMPIRE
RUSSIAN
ASIA
NEW SIBERIA
Bennett I
C. Chelaskin
Lakow I
Wrangel I
Behring Sea
Gulf of Amador
SEA OF OKHOTSK
Aleutian Islands
Esquimaux
Mackenzie Bay
Sir J. Barrow
ALASKA
TERRITORY
PARRY ISLANDS
GREENLAND
Baffins Bay
MELVILLE SOUND
DAVIS STRAIT
ICELAND
NORTH
AMERICA
HUDSONS BAY
Sitka
VANCOUVER
UNITED STATES
CANADA
San Francisco
New York
Halifax
C. Hatteras
Bermudas
Azores
Madeira
Canary Is.
TEXAS
FLORIDA
GULF OF MEXICO
MEXICO
CALIFORNIA
Bahama I.
Cuba
St. Domingo
Jamaica
Honduras
Guatemala
CARIBBEAN SEA
VENEZUELA
COLOMBIA
PANAMA
Trinidad
R. Orinoco
R. Amazon
C. Verd I
C. VERD. & LEONE
NORTH ATLANTIC OCEAN
CHINESE EMPIRE
CHINESE TARTARY
CHINA
Pekin
Nankin
Canton
Formosa
Loo Choo I
Bonin Is.
Tropic of Cancer
Hoanan
Yellow Sea
Sea of Japan
Yesso
NIPHON
THIBET
AFGHANISTAN
BELOOCHISTAN
TURKEY
PERSIA
ARABIA
Mecca
Muscat
Bombay
Gulf of Bengal
BURMAH
SIAM
ARABIAN SEA
Delhi
Agra
Calcutta
Ava
Sandwich Islands
Honolulu
Hawaii
Marshall Is.
Philippine Is.
Mindanao I.
CAROLINE ISLANDS
Pellew Is.
CHINA SEA
BORNEO
Celebes Sea
SUMATRA
JAVA
PACIFIC OCEAN
Equator
Gilbert I.
New Ireland
New Britain
SOLOMON Is.
QUIROS
CORAL SEA
AUSTRALIA
Brisbane
Sydney
Adelaide
Melbourne
Port Phillip
VAN DIEMANS LAND
NEW ZEALAND
Auckland
Wellington
Chatham I.
Port Chalmers
Stewart I.
Auckland I.
Friendly Is.
New Hebrides
New Caledonia
Fiji Islands
Tropic of Capricorn
Marquesas
Galapagos I.
Guayaquil
Lima
Valparaiso
Juan Fernandez
SOUTH AMERICA
BRAZIL
R. San Francisco
BAHIA
Pernambuco
Ascension
Rio Janeiro
Monte Video
R. de la Plata
SOUTH ATLANTIC OCEAN
Falkland Is.
Str. of Magellan
Terra del Fuego
C. HORN
New Orkneys
SOUTH INDIAN OCEAN
St. Paul de Loanda
Fernando Po
C. of Good Hope
Port Natal
Antarctic Circle
H. gutturalis.
H. gutturalis, breeding-range.
H. angolensis.
H. arcticincta.
H. lucida.
THE WORLD
ON MERCATORS PROJECTION
0 20 40 60 80 100 120 140 160 180 160 140 120 100 80 60 40 20 0



HIRUNDO TAHITICA.

HIRUNDO TAHITICA, *Gm.*

PACIFIC SWALLOW.

Otaheite Swallow, Lath. Gen. Syn. ii. pt. 2, p. 563, pl. frontisp. (1783).

Hirundo tahitica, Gm. Syst. Nat. i. p. 1016 (1788); Gray, Gen. B. i. p. 58 (1845); id. B. Trop. Isl. Pacific Ocean, p. 4 (1859); Pelz. Reis. Novara, Vög. p. 41 (1865); Finsch & Hartl. Faun. Centralpolyn. p. 51 (1867); Gray, Hand-l. B. i. p. 70, no. 811 (1869); E. L. Layard, P. Z. S. 1875, p. 430; id. Ibis, 1876, p. 391; Finsch, P. Z. S. 1877, pp. 730, 738; E. L. & L. C. Layard, Ibis, 1878, pp. 270, 280; Schmeltz, Verh. Ver. Hamb. 1879, p. 76; Tristr. Ibis, 1879, p. 192; Nehrk. J. f. O. 1879, p. 395; Salvad. Ibis, 1880, p. 130; Tristr. t. c. p. 246; L. C. Layard, t. c. p. 298; Finsch, Ibis, 1881, p. 536; id. Rep. Voy. 'Challenger,' ii. Birds, pp. 43, 53 (1881); Salvad. Orn. Papuasia etc. ii. p. 5 (1881); Tristr. Ibis, 1882, p. 142; Layard, t. c. pp. 503, 543; Finsch, Vög. der Südsee, p. 5 (1884); Sharpe, Cat. Birds in Brit. Mus. x. p. 141 (1885); Grant, P. Z. S. 1887, p. 330, 1888, p. 194; Salvad. Agg. Orn. Papuasia, ii. p. 69 (1890); Wiglesw. Abhandl. k. Zool. Mus. Dresden, no. 6, p. 18 (1891).

Hirundo taitensis, Less. Voy. 'Coquille,' i. p. 648 (1826).

Herse taitensis, Less. Compl. Buff. viii. p. 443 (1837).

Hirundo pyrrholæma, Forster, Icon. ined. no. 167; id. Descr. Anim. p. 241 (1844).

Cecropis taitensis, Boie, Isis, 1844, p. 175.

Herse tahitica, Bp. Consp. i. p. 340 (1850).

Petrochelidon pacifica, Cass. Cat. Hirund. Philad. Mus. p. 5 (1853).

Chelidon tahitica, Licht. Nomencl. Av. p. 61 (1854).

Hirundo subfusca, Gould, P. Z. S. 1856, p. 137; Gray, Cat. B. Trop. Isl. Pacific Ocean, p. 4 (1859).

Petrochelidon tahitica, Cass. Cat. Hirund. Philad. Mus. p. 5 (1853); Bp. Rivist. Contemp., Torino, p. 5 (1857).

Phedina subfusca, Bp., teste Salvad.

Hirundo (*Herse*) *tahitica*, Pelz. Reis. 'Novara,' Vög. p. 41 (1865).

H. minor: alis caudam excedentibus: præpectore minimè torquato: fronte rufâ: gulâ intensè rufâ: rectricibus omnibus concoloribus vel minutè albido notatis.

Hab. in insulis Oceanicis maris Pacifici.

Adult male. General colour above dull steel-blue or blue-black, with ashy bases to the feathers; lesser and median wing-coverts like the back; greater coverts, bastard-wing, primary-coverts, and quills blackish, slightly glossed with steel-blue on the outer web; tail-feathers uniform blackish,

with a slight steel-blue gloss on the outer webs; forehead deep chestnut; lores blackish; ear-coverts dull steel-blue like the head; cheeks, throat, and fore neck deep chestnut, with a half-crescent of steel-blue descending on the sides of the latter; remainder of under surface of body uniform smoky brown, with a few mottled feathers in the centre of the breast, some of the feathers being washed with steel-blue near their ends; under tail-coverts smoky brown, edged with rufous, with a distinct subterminal spot of steel-blue; under wing-coverts and axillaries dark smoky brown; quills dusky below, rather lighter brown on the inner webs: "bill and legs black; iris dark brown" (*Layard*). Total length 5 inches, culmen 0·35, wing 4·15, tail 2, tarsus 0·3.

Adult female. Similar to the male in plumage. Total length 5 inches, culmen 0·45, wing 4·2, tail 2, tarsus 0·4.

Hab. Tahiti; Tonga group; Fiji Islands; New Hebrides; Solomon Islands; New Britain; New Caledonia?

The principal difference between this species and its ally *H. javanica* has hitherto been considered to consist in the absence of white spots on the tail-feathers, these being always a noticeable feature in *H. javanica.* Mr. Seebohm has, however, recently pointed out to us that white spots on the tail are often present in *H. tahitica,* though in a reduced form; and a re-examination of the specimens in the British Museum, along with the series in the collections of Mr. Lister and Mr. Seebohm, has convinced us that the latter gentleman is quite correct in his statements.

As will be seen below, the presence or absence of white spots on the tail is not a character which is accompanied by any coincident feature of peculiar geographical distribution, nor are the spots on the tail-feathers always to be found equally developed on each side of the tail, as the following list will show :—

α. Specimens without any trace of white on the tail-feathers.

a. ♂. Ovalau (*E. L. Layard*).
b. ♂. Ovalau (*E. L. Layard*).
c. ♀. Matuka (*Voy. H.M.S. 'Challenger'*).
d. ♂. Kandavu (*E. L. Layard*).
e. ♀. Api, New Hebrides (*Voy. H.M.S. 'Challenger'*).
f. Ad. New Britain (*Dr. Kleinschmidt*).
g. ♀. Guadalcanar, Solomon Islands (*C. M. Woodford*).

β. Specimens with faint spots of white on the inner web of the tail-feathers.

a. ♀. Ovalau (*E. L. Layard*).—An indistinct spot on penultimate feather on both sides of tail.
b. ♂. Levuka (*E. L. Layard*).—White spot indistinct on right penultimate feather, indistinct on penultimate feather of left side, but quite distinct on second and third feathers of left side.
c. ♀. Matuka (*Voy. H.M.S. 'Challenger'*).—Spot distinct on right penultimate feather of right side, but scarcely visible on left penultimate feather.
d. ♀. Kandavu (*Voy. H.M.S. 'Challenger'*).—A small spot visible on right outer feather.
e. ♀. Moala (*T. M. Rayner*).—A tiny spot on outer feather.
f. ♂. Nomuka-iki (*J. J. Lister*).—A white spot faintly indicated on the three outermost feathers of right side and on the penultimate feather of left.
g. ♀. Nomuka-iki (*J. J. Lister*).—A white spot scarcely visible on the two outside feathers of right side and on the penultimate feather of left.

h. ♂. Nomuka-iki (*J. J. Lister*).—Spot very plain on penultimate feather of right side and on penultimate and third feather of left.

i. ♂. Nomuka-iki (*J. J. Lister*).—Spot very plain on penultimate and third feathers of both sides.

k. ♂. Nomuka-iki (*J. J. Lister*).—Spot distinct on penultimate feather of both sides, with a faint trace of a white spot also on the third feather of the left.

l. Aneiteum (*J. Macgillivray*).—An obsolete whitish spot on the outer feather on both sides, a spot also traceable on the penultimate and third feather of the right side and on the penultimate feather of the left side.

m. ♂. Vaté, New Hebrides (*L. C. Layard*).—Only a slight indication of a whitish spot on the third feather of the left side.

As its English name implies, the present species is a bird of the Pacific Islands. It was first recorded from the Society group, is widely distributed in the Fiji Archipelago, the Tonga group, and certainly occurs in the New Hebrides, in the Solomon Archipelago, and in New Britain. From all of these localities we have examined specimens; but it is quite probable that in the eastern limit of the bird's range it meets with its ally *H. javanica*, an undoubted specimen of which species we have examined from Duke of York Island. That the specific characters which separate the two species are not of the most constant character will be seen by our notes on the variation which occurs in the present bird.

The occurrence of the species in the Sandwich Islands, as recorded by Cassin, who notes a specimen received from the Rivoli collection, requires confirmation, and the New Caledonian record is not satisfactory. Mr. E. L. Layard and his son saw a bird in the latter island on the 26th of November, 1879, which they believe to have been a Pacific Swallow, but they were unable to procure it.

The present species was first discovered in the "mountainous parts" of Otaheite, or Tahiti, in the Society Islands, during Captain Cook's Voyage, and the specimen described by Latham was said by him to be in the collection of Sir Joseph Banks. It was probably the actual specimen figured by Forster in his 'Drawings,' and called by him *H. pyrrholæma* in the 'Descriptiones Animalium.'

Mr. J. J. Lister has recently met with the species in the Tonga group at Nomuka-iki. In the Fiji Archipelago the following islands are given as the abode of the species by Mr. E. L. Layard:—Ovalau, Wakaia, Mokani, Taviuni, Loma-Loma, Mango, Vitu Levu, and Kandavu. It was also obtained on Moala Island by Dr. Rayner during the voyage of H.M.S. 'Herald.' The 'Challenger' Expedition likewise obtained specimens at Matuka and Kandavu.

Writing from the Fiji Islands, Mr. E. L. Layard says:—

"This Swallow is very local, but, I think, widely spread throughout the islands. It is said to nest in rocks; and I feel confident that a pair nested this year in the cracks and crannies of 'Brewer's Rock,' as they were visible almost every evening during my residence in my present house, flitting over the little point of land on the other side of

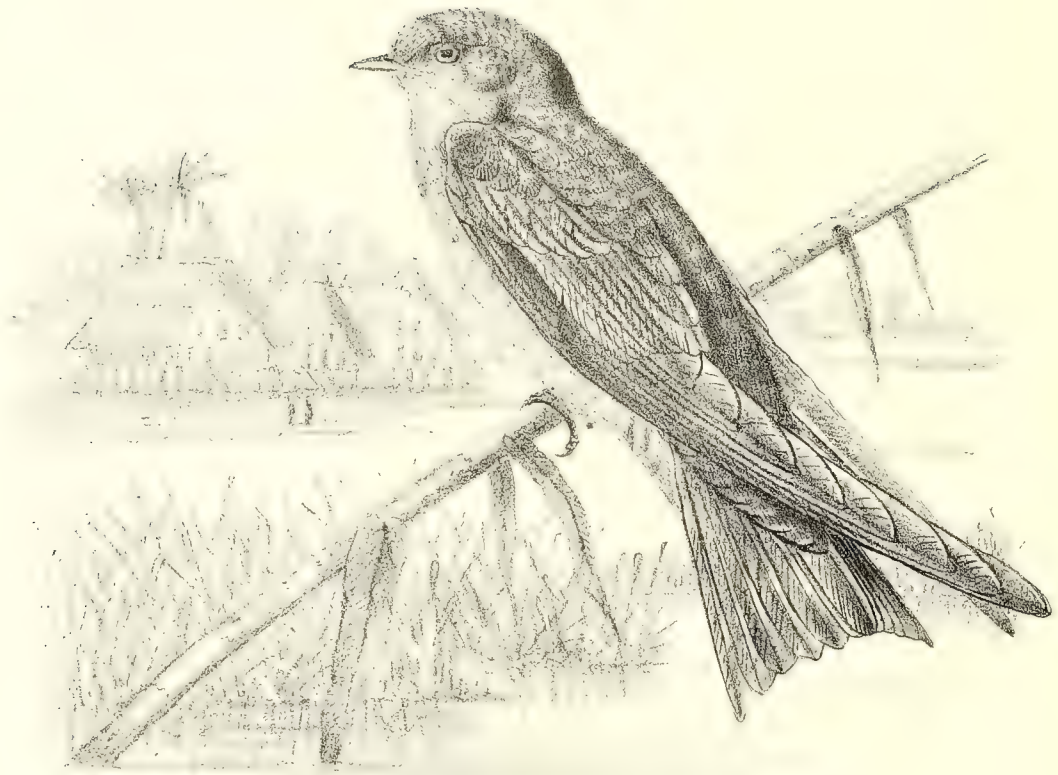
the creek, and in front of my verandah. They are very crepuscular in their habits. I saw them in the hills as far up the Rewa River as Naruku-ruku, mingled with the Swifts, also at Kandavu, Loma-Loma, and Taviuni."

Mr. L. C. Layard, in his account of the birds observed by him in the New Hebrides, says that only six individuals of this Swallow were seen—one pair on Santo and two pairs on Vaté, out of which last three birds were procured. These were in a maize-field, attracted by the insects put up by burning the grass. They perched on the tops of the stalks. In Santo they were on trees overhanging water. The late John Macgillivray obtained the species on the island of Aneiteum, and it was also met with at Api by the 'Challenger' Expedition. Canon Tristram recorded the present species from the Solomon Islands, where it was obtained by Commander Richards at San Cristoval and St. George. Count Salvadori was inclined to doubt the occurrence of *H. tahitica* in the Solomon group, but Mr. C. M. Woodford has obtained perfectly typical examples in Guadalcanar and Alu. In New Britain Dr. Finsch states that the bird is a migrant, and he does not appear to have collected specimens, but the species has been obtained in the island by Dr. Kleinschmidt.

Mr. L. C. Layard has given the following note on the breeding of the species in the New Hebrides:—

"I found one nest on a ledge under an overhanging rock, made, as usual, of mud, the depression lined with feathers. This was during the last week in August, and the three eggs were just on the point of hatching. They are of a very pale pink ground-colour, generally spotted throughout with brown-madder spots, which run very thickly together, and form a ring at the greatest diameter. The only specimens obtained are all more or less damaged in extracting the embryos, but measure about, axis $10'''$, diam. $6\frac{1}{2}'''$."

The descriptions of the present species have been taken from a pair of birds in the British Museum, while the figure has been drawn from a specimen in Mr. Seebohm's collection.



Mintern Bros. imp.

HIRUNDO JAVANICA, *Sparrm.*

TROPICAL SWALLOW.

Hirundo javanica, Sparrm. Mus. Carls. ii. pl. 100 (1789); Vieill. N. Dict. d'Hist. Nat. xiv. p. 523 (1817); Temm. Pl. Col. iv. pl. 83. fig. 2 (1823); Gray, Gen. B. i. p. 57 (1845); Temm. & Schl. Faun. Jap., Aves, p. 32 (1850); Cab. Mus. Hein. Th. i. p. 46 (1850); Wall. Ibis, 1860, p. 147; id. P. Z. S. 1863, p. 485; Gray, Hand-l. B. i. p. 70, no. 813 (1869); Finsch & Hartl. Vög. Ostafr. p. 137, note (1870); Walden, Tr. Z. S. viii. p. 66 (1872); Swinh. Ibis, 1873, p. 231; Salvad. Ucc. Born. p. 126 (1874); id. Ann. Mus. Civic. Genov. vii. p. 767 (1875), ix. p. 23 (1876), x. p. 130 (1877); Sharpe, Ibis, 1876, p. 43; Bourd. Str. F. 1876, p. 374; Fairb. Str. F. 1877, p. 392; Sharpe, Journ. Linn. Soc., Zool. xiii. p. 498 (1877); Tweedd. Ibis, 1877, p. 316; id. P. Z. S. 1877, p. 760, & 1878, pp. 109, 342, 615, 709; Salvad. P. Z. S. 1878, p. 95; Hume & Davison, Str. F. 1878, p. 43; Ramsay, Proc. Linn. Soc. N. S. W. iii. p. 275 (1879), iv. p. 98 (1879); Finsch, P. Z. S. 1879, p. 10; Meyer, Ibis, 1879, p. 128; Salvad. Ann. Mus. Civic. Genov. xiv. pp. 492, 647 (1879); Hume, Str. F. 1879, pp. 47, 84; Sharpe, P. Z. S. 1879, p. 344; Legge, B. Ceylon, p. 597 (1879); Hume, Str. F. 1880, p. 120; Salvad. Report Voy. 'Challenger,' ii. Birds, p. 78 (1881); id. Orn. Papuasia etc. ii. p. 3 (1881); Sharpe, Journ. Linn. Soc., Zool. xvi. p. 430 (1882); Müller, J. f. O. 1882, p. 361; Davison, Str. F. x. p. 345 (1883); Vorderm. Nat. Tijdschr. Nederl. Ind. xlii. p. 209 (1883); Meyer, Sitz. Abhandl. Gesellsch. 'Isis,' Dresden, 1884, Abth. i. p. 22; Sharpe, Ibis, 1884, p. 321; Forbes, P. Z. S. 1884, pp. 426, 433; Pleske, Bull. Acad. St. Pétersb. xxix. p. 528 (1884); Sharpe, Cat. Birds in Brit. Mus. x. p. 142 (1885); Nehrk. J. f. O. 1885, p. 32; Guillem. P. Z. S. 1885, pp. 261, 419, 553; Vorderm. Nat. Tijdschr. Nederl. Ind. xlv. p. 326 (1886); Salvad. Ann. Mus. Genov. (2) iv. pp. 520, 538 (1887); Seeb. Ibis, 1887, p. 176; Vorderm. Nat. Tijdschr. Nederl. Ind. xlvi. p. 228 (1887); Ramsay, Tab. List Austr. B. p. 2 (1888); W. Blasius, Ornis, iv. p. 580 (1888); Everett, Journ. Straits Branch As. Soc. 1889, p. 134; Sharpe, Ibis, 1889, p. 430; Vorderm. Nat. Tijdschr. xli. p. 396 (1890); Salvad. Agg. Orn. Papuasia, pt. ii. p. 69 (1890); Whitehead, Ibis, 1890, p. 49; Seeb. B. Japan Emp. p. 142 (1890); Oates, ed. Hume's Nests & Eggs Ind. B. ii. p. 186 (1890); id. Faun. Brit. Ind., Birds, ii. p. 279 (1890); Vorderm. Nat. Tijdschr. Nederl. Ind. l. pp. 414, 451 (1891); Salvad. Ann. Mus. Genov. (2) xii. p. 49 (1891); Steere, List B. & Mamm. Philipp. p. 16 (1891).

Javan Swallow, Lath. Gen. Syn. Suppl. ii. p. 259 (1801).

Hirundo frontalis, Quoy et Gaim. Voy. de l'Astrol., Zool. i. p. 204, pl. 12. fig. 1 (1830); Gray, Gen. B. i. p. 57 (1845); Scl. Proc. Linn. Soc., Zool. ii. p. 155 (1858); Gray,

P. Z. S. 1858, p. 189, 1859, p. 154; id. Cat. Mamm. etc. N. Guin. pp. 18, 54 (1859); id. P. Z. S. 1861, p. 433; Finsch, Neu-Guinea, p. 162 (1865, pt.); Gray, Hand-l. B. i. p. 70, no. 812 (1869, pt.); Ramsay, Proc. Linn. Soc. N. S. W. ii. p. 179 (1878).

Herse frontalis, Less. Compl. Buff. viii. p. 497 (1837).

Herse javanica, Less. t. c. p. 497 (1837).

Cecropis javanica, Boie, Isis, 1844, p. 174.

Cecropis frontalis, Boie, Isis, 1844, p. 174.

Hirundo domicola, Jerd. Madr. Journ. xiii. p. 173 (1844); Blyth, Cat. B. Mus. As. Soc. p. 198 (1849); Kelaart, Prodr. Cat. p. 118 (1852); Layard, Ann. & Mag. Nat. Hist. xii. p. 170 (1853); Moore, P. Z. S. 1854, p. 264; Horsf. & Moore, Cat. B. Mus. E.I. Co. i. p. 384 (1854); Jerd. B. Ind. i. p. 158 (1862); Scl. P. Z. S. 1863, p. 217; Blyth, Ibis, 1866, p. 336; Bulger, P. Z. S. 1866, p. 568; Gray, Hand-l. B. i. p. 70, no. 814 (1869); Holdsw. P. Z. S. 1872, p. 418; Elwes, Ibis, 1870, p. 527; Jerd. Ibis, 1871, p. 351; Morgan, Ibis, 1875, p. 313.

Hirundo pacifica (nec Lath.), Motl. & Dillw. N. H. Labuan, p. 10 (1855).

Hirundo neoxena (nec Gould), Gray, P. Z. S. 1858, p. 189, 1861, p. 433; Rosenb. Nat. Tijdschr. Nederl. Ind. xxv. p. 234 (1863).

Hypurolepis domicola, Gould, B. Asia, i. pl. 32 (1868); Hume, Nests & Eggs Ind. B. p. 73 (1873); id. Str. F. 1874, p. 155.

Hypurolepis javanica, Oates, B. Br. Burm. i. p. 308 (1883).

Hirundo fretensis, Ramsay, Proc. Linn. Soc. N. S. W. ii. p. 179 (1878, nec Gould).

H. minor: pileo et uropygio dorso concoloribus: fronte rufâ: caudâ conspicuè albo maculatâ: subcaudalibus fumoso-brunneis, albo marginatis.

Hab. in Peninsulâ Indicâ meridionali, in insulâ Zeylonicâ, in regionibus Indo-Burmanicis et per totam regionem Indo-Malayanam et in insulis Moluccanis et Papuanis.

Adult male. General colour above dull steel-blue; lesser wing-coverts like the back; the median and greater coverts edged with dull steel-blue; inner greater coverts ashy towards the end of the inner web; primary-coverts and quills black; upper tail-coverts like the back; tail-feathers black, slightly glossed with steel-blue, all but the two centre feathers with an ovate spot of white on the inner web; crown of the head dull steel-blue like the back; a broad frontal band of brick-red; lores blackish, as also the feathers round the eye; ear-coverts brick-red like the sides of the face, but blue along their upper margin; cheeks, throat, and fore neck brick-red; sides of the neck dull steel-blue; breast dull ashy brown, the sides of the upper breast with a dull blue patch like the sides of the neck; abdomen ashy whitish; sides of the body and flanks dull smoky brown; thighs smoky brown, tipped with ashy; under tail-coverts smoky brown, margined conspicuously with ashy white, before which is a bluish-black shade, broader on the longer coverts and producing there a strongly marked appearance; the longest ones entirely blackish with ashy white tips; under wing-coverts and axillaries smoky brown, with a slight shade of rufous; quills below dusky brown, inner edges rather more smoky brown: "bill blackish, the base of the lower mandible reddish; feet brown, the edges of the tarsal scales whitish; claws black" (*W. V. Legge*). Total length 4·5 inches, culmen 0·35, wing 4·15, tail 1·8, tarsus 0·35.

Adult female. Similar to the male in colour. Total length 4·5 inches, culmen 0·3, wing 4·1, tail 1·75, tarsus 0·35.

We have described a pair of birds from the Nilghiris, though from this part of India the specimens are decidedly darker in colour than many birds from other localities.

This Swallow varies considerably in the colour of the under surface; but we have not been able to trace a definite character by which actual races or subspecific forms can be recognized. The connection between *H. javanica* and *H. tahitica* is much closer than has been generally supposed. If a specimen of typical *H. javanica* from Java be compared with one of *H. tahitica* from Tonga, the two species seem to all appearances to be quite distinct. In *H. tahitica* the rufous forehead and throat appear much darker, and the under surface of the body is also darker and almost entirely uniform, with the exception of some blue-tipped feathers in the centre of the chest, which form a streak. The tail also is entirely uniform, without any white spots on the inner web. Thus, were these characters constant, there would be no difficulty in distinguishing the two species; but, as a matter of fact, the white spots on the tail vary to such an extent, that it is even doubtful whether absolute specific characters can be drawn between these two supposed species. Under the heading of *H. tahitica* we have alluded to the variation in the spotting of the tail-feathers, and we need not further allude to the subject here; but in *H. javanica* the shade of ashy brown on the under-parts is also a variable character. Specimens from the Malayan Peninsula, Java, Sumatra, and Lombock are very similar to one another, and are nearly as uniform below as *H. tahitica*, this being especially the case with the Lombock birds; but in none of them is there any trace of the mesial black plumes on the centre of the chest. The under tail-coverts are somewhat rufescent on the margins. In specimens from Southern India the under surface is dark, and the under tail-coverts are margined with whitish, as a rule. The birds from the Philippines and Palawan are much whiter on the abdomen, and specimens from North-eastern Borneo and Labuan resemble them in the white abdomen and white-edged under tail-coverts; but other examples from Sarawak and Banjarmassing are of the same dark-breasted form as that which inhabits Java and the Sunda Islands generally. The only specimens from South-eastern New Guinea in the British Museum are exceptionally pale in colour and have the abdomen conspicuously white, while the under tail-coverts also appear to be paler and to have only subterminal black markings, without any long black central coverts, as is often the case with specimens from other localities. They approach, in fact, *H. neoxena*, but of course have not the elongated tail-feathers of that species.

The present species belongs to the section of the genus *Hirundo* which contains our Common Swallow and its allies; but it is one of the short-tailed section of the genus, which, though strongly represented in the Indian Region, has several near allies in Africa. The range of *H. javanica* is interesting, as it is one of those species of birds which occur in Southern India and Ceylon, but avoid the Indian Peninsula in general, and then reappear in the islands of the Bay of Bengal and extend throughout the Malayan Region. In the case of the present species the range is continued throughout the Moluccas and Papuan Islands as well.

"The present species," writes Colonel Legge, "is a resident inhabitant of the mountains of Ceylon, and is, as in the south of India, restricted to high elevations. Though common as low down as the valley of Dumbara, it appears resolutely to decline

any descent into the hot regions round the base of the mountains, for I have never seen it, or heard of its being observed, in the low country. It is found in the open districts formed by the great valleys in the Central Province, about estates, and on the plains of the upper regions, being very common at Nuwara Elliya and in the neighbourhood. I observed it at Horton Plains, and in the southern ranges met with it in the Morowak and Kukkul Korales; and throughout the high tract formed by these and the adjoining Korales it is found down to the same altitude as in the Kandy country."

On the Indian Peninsula it is known from Travancore, the Nilghiris, and the Palani Hills. Mr. H. J. Elwes procured the species on the Cardamum Hills; and Mr. F. Bourdillon states that it is a resident in Travancore, "travelling but little, two or three persistently frequenting each sheltered ravine in an open clearing." The Rev. S. B. Fairbank, in his paper on the birds of the Palani Hills, states that it was obtained on the summit of the range, and also at Semiganûr at an elevation of 5500 feet. In the Nilghiri Hills it is a resident species and very common, according to Mr. Davison, commencing to breed about the last week in February. The late Dr. Jerdon believed that it was this Swallow which he found breeding at Bangalore; but it has not been recorded from that place by Major Wardlaw Ramsay or by any other ornithologist who has collected of late years in that vicinity.

Mr. Hume writes:—"This species appears to be common in the Andamans, at any rate from the beginning of June to the end of September, as a number of specimens have been sent to me, procured on different dates during these months. We none of us saw this species anywhere about the islands between the beginning of December and the end of April. It is therefore apparently only a monsoon visitant." Colonel Legge also observes that, judging from the dates recorded of the appearance of the species in the islands of the Bay of Bengal and Tenasserim, it would seem that the species "migrated with the south-west monsoon from South India or Ceylon across to the last-mentioned localities, not straying above 13° or 14° N. lat."

In Burma proper the present species has not yet been observed, though Mr. Oates considers that it is not unlikely to occur within the limits of the province. Mr. Hume believes that it will be found only in the more southern provinces of Tenasserim, as Mr. Davison only met with the species in Mergui in June. There they were by no means numerous, and Mr. Davison concluded that they were migrating; but as Mr. Theobald found the species nesting in Tenasserim, Mr. Oates concludes that it is really a resident in that province. The Tropical Swallow is apparently, as Mr. Oates justly observes, a resident bird in all the countries which it inhabits; but Mr. Hume's evidence as to its migrations in the Andamans must not be overlooked. Further to the south Mr. Darling procured the present species at Kossoum, and at the mouth of the Poongah River, in the north of the Malayan Peninsula, in August. Dr. Müller has recorded it from Salanga Island; and long ago Dr. Cantor met with it in Penang. Here, says Mr. Swinhoe in 1873, it was the prevailing Swallow, and he found it nesting. Mr. Davison has also obtained it in Johore in March.

Dr. A. R. Wallace procured specimens of this Swallow in West Java, and Dr. Vorderman has recorded it from the Salak Mountains. At Batavia, according to the last-named naturalist, it breeds. He also records it as nesting in the Island of Billiton.

Dr. Wallace met with the species in Sumatra during his travels in the Malay Archipelago, and more recently Mr. Buxton found it in South Lampong; while Signor Modigliani has procured specimens at Siboga in April and September, and at Balige in October. He also found it in the Island of Nias. In the Philippines Mr. A. H. Everett was the first to meet with the species, viz. in the Island of Cebu, in April. He afterwards procured it in South Leyte in September and October, and in Dinagat in September and North Bohol in October. Dr. Platen also met with it in Mindanao. By the Steere Expedition it was recorded from Negros, Samar, Mindoro, and Basilan. Meanwhile Mr. Lemprière had also collected a specimen at Marasi Bay in Southern Palawan: it was subsequently noted at Puerto Princesa by Mr. Everett and Professor Steere, and Mr. John Whitehead remarks that it was "fairly common" near Taguso. Dr. Guillemard met with the species in the Island of Cagayan Sulu, "flying about the vicinity of the crater-lakes in the month of April." He also found it in the Sula Islands. In Labuan it breeds, and, according to Mr. John Whitehead, it is common throughout Northern Borneo. Dr. Wallace met with it in Sarawak, and Mr. A. H. Everett procured some specimens at Sibu in October. It was also found at Moera Teweh by Dr. Fischer and by Mr. Motley at Banjarmassing.

Dr. Wallace states that this Swallow is common in Celebes, and he also met with it in the Sula Islands. Dr. Meyer has received it from Tabukan in the Sangi group. It is widely spread throughout the Moluccas, having been found in Lombock and Timor by Dr. Wallace and by Mr. Riedel in Timor Laut. Count Salvadori gives the following list of its localities in his 'Ornitologia della Papuasia':—Batchian, Morotai, Ternate (*Bernstein*), Bouru (*Wallace*; *Hoedt*), Amboyna (*Hoedt*), Matabello (*Rosenberg*), Ké Islands (*Rosenberg*), Aru Islands, Salawati (*Rosenberg*), Dorey (*S. Müller*; *Wallace*), Sorong (*D'Albertis*), Jobi (*Bruijn*). It has also been met with on the Island of Waigiou by Dr. Platen, and it was procured at Dobbo in the Aru Islands during the 'Challenger' Expedition. In South-eastern New Guinea Signor D'Albertis met with the species on Yule Island, Mr. Stone in the neighbourhood of Port Moresby, and Mr. Goldie on the Astrolabe Range. It was likewise procured by the late John Macgillivray on the Redscar Islands off the south-east coast of New Guinea; and the Salvin-Godman collection contains three specimens said to have been obtained by Mr. J. T. Cockerell in the islands in Torres Straits. These islands are indeed a very probable habitat for the species; but the locality requires some confirmation, as Mr. Cockerell notoriously mixed up his collections from the Aru Islands and Northern Australia.

The most eastern habitat of the species seems to be New Ireland and the Duke-of-York Island, where it was met with by Dr. Hübner and Mr. L. C. Layard, the latter of whom found it breeding.

The following account of the habits and nidification of the species in Ceylon is given by Colonel Legge :—

"To the resident in the beautiful mountains of Ceylon this little bird has much the same interest as that which the Common Swallow possesses for the occupants of the many English homes to which it is so welcome a visitor; with this difference, however, that it is a constant attendant about the Ceylon bungalow throughout the year, flitting in and out of the rose-covered and trellised verandah, gliding over the spacious barbecues bestrewn with the rich produce of the estate, or settling on the roofs of the pulping-houses, from the tops of which it utters its merry little twitter while it prunes its glossy plumage in the rays of the morning sun. No wonder, then, that it is a general favourite with the planter, reminding him of scenes far away, and bringing back to him recollections of those from whom he is so widely removed. In the mind of the author this interesting bird is connected with pleasing memories, not easily forgotten, of much kindness received, and, moreover, of the glorious mountain prospects viewed from the verandah of many a hospitable bungalow, round which he has often seen it flying while resting after the exertions of a long toil up the zigzag paths of the estate. It is found about the villages of the Kandyans, and hawks for its food over patnas and cleared hill-sides, as well as round the stores and buildings of the estates. On some bare spot or on a pathway in the open it may sometimes be seen resting, and I have occasionally seen it perched on a dead branch or stake; but its favourite post is the eave of some building. Its flight is very buoyant, but not at all swift, and its twitter is not unlike that of the Common Swallow.

"The breeding-time of the Hill-Swallow is in April, May, and June; it nests in the verandahs of bungalows and outbuildings of estates and under the eaves of native houses, building sometimes beneath the ceilings of rooms without evincing any fear of the inmates. Such a nest I once observed in the sitting-room of the old Banderawella Resthouse. It is usually placed against the side of a beam or projecting baulk of timber, and resembles in its construction that of *H. erythropygia*, though somewhat smaller. It is composed of mud and lined with feathers, thread, small pieces of rag, and such materials as it may pick up about its adopted residence. The eggs are usually three in number, stumpy ovals in shape, and of a white ground-colour, spotted pretty evenly with brownish red.

"I once found a Swallow's nest in a small cavern or recess in the face of a cliff in Haputale, and it no doubt belonged to this species. In some eggs there is a tendency in the markings to form a zone at the large end. They measure about 0·77 by 0·5 inch."

The following notes on the nidification of *H. javanica* will be found in Mr. Hume's 'Nests and Eggs of Indian Birds' (2nd edition, edited by Mr. E. W. Oates):—

"The Nilghiri House-Swallow," says Mr. Davison, "breeds on the western side of these hills from February to April, rearing (from what I have observed) two broods in immediate succession. The nest is composed of pellets of mud, thickly lined with feathers, open at the top, with the saucer-like depression rather deep; it is usually placed in some

building, cave, or against some well-sheltered rock. The eggs, usually three in number, are white, spotted with brown and reddish brown, with a few larger markings of a purplish colour. Occasionally four eggs are laid; but when this is the case I have found that invariably only three hatch.

"About a week after the first brood have flown the old birds begin to remove the topmost feathers of the nest, replacing them by fresh ones. Three eggs are then again laid, and a second brood reared. After this brood have flown, the old birds still continue to occupy the nest at night, or, more correctly, to occupy the edge of the nest, for they do not get into it, but merely sit close together on its edge. The same nest is occupied the following year, the upper feathers being only removed and replaced by fresh ones. Should the nest have been destroyed, a fresh one is built on the same site. The birds do not begin to sit till the full complement of eggs are laid, and both birds take part in the task of incubation."

Mr. Wait, writing from Coonoor, to the eastward of Ootacamund, observes that they "breed from April to June, building under eaves, bridges, open sheds, &c., and generally against the sides of the rafters. The nest, composed of mud-pellets worked together and lined with soft feathers, is somewhat irregular in its external shape, and has a rather shallow cup-like egg-cavity some $2\frac{1}{2}$ inches in diameter; they lay from two to five eggs, very round ovals, white, spotted with reddish brown."

Miss Cockburn, writing from Kotagherry, remarks:—

"They are fond of returning to the same places in which they build every year, and appear to prefer erecting their little nests in verandahs and eaves of outhouses. Many years ago I remember watching for some days a battle between a cock Sparrow and a pair of House-Swallows. The latter had finished their neat nest in our verandah, when the Sparrow discovered it, and never left it except for the purpose of satisfying his appetite. The poor Swallows saw they could do nothing, so they disappeared, and told their friends the sad tale in Swallow language; and as 'in the multitude of councillors there is wisdom,' some time after, to our surprise, we saw a great number of House-Swallows, each with a wee lump of clay in its bill. They flew up to the nest, and succeeded in building up the sides, the Sparrow inside doing his utmost to stop their work; but they, being accomplished artisans in their own masonry, did not take a second to fix each piece of clay. It became a most exciting scene, and we fully expected the Sparrow would have been imprisoned for life; but no, he was much too crafty to allow that. With one effort he burst through the very small hole which was unclosed, and escaped, being attacked by all the Swallows at the same instant. This conflict ended by the rightful owners having possession of their nest. They build here in the month of April, and lay two white eggs with dark specks and spots."

Mr. W. Theobald makes the following remarks on the breeding of this bird in Tenasserim:—"Lays in the second week of April. Eggs three in number, long, ovato-pyriform; size 0·77 inch by 0·52 inch; colour white, spotted and ringed with umber. Nest a saucer of mud; inner part coarse roots, profusely lined with feathers and

vegetable down, attached to the under part of snags projecting some four feet above the water."

The eggs of this species closely resemble those of *H. rustica*, but are decidedly smaller, and are, we think, somewhat less glossy. They are moderately broad ovals, slightly compressed towards one end, have a pinky-white ground, and are very finely speckled and spotted, thinly at the small end, more densely at the large end, where there is a tendency to form a zone, with different shades of dull purple and brownish red. In some all the markings are comparatively large and coarse, in others excessively minute, and the intensity of the colour of the markings varies much in different specimens.

In length the eggs vary from 0·64 to 0·77 inch, and in breadth from 0·48 to 0·57 inch; but the average size is about 0·7 by 0·5 inch.

Mr. Rhodes Morgan also observes:—

"Breeds in the Neilgherries in the roofs of houses and verandahs, also on large rocks and cliffs. In shape the nest resembles a pocket or the half of a teacup. It is formed of small clay pellets agglutinated together with the saliva of the bird, and is very firmly cemented to the face of the rock. The lining consists of feathers. The eggs are generally two in number, minutely speckled with claret-coloured spots on a whitish ground, the spots being gathered together in a zone at the larger end. Average length ·77 inch, breadth ·5."

In Northern Borneo Mr. John Whitehead says it is often found "nesting under the verandahs of houses, but I once saw a nest in an old tree-stump, which was standing up in the middle of a river. The nest is made of mud and grass, and contains two eggs in May and other months. The eggs are white, spotted and marked like those of *H. rustica*."

The following note was sent by the late Governor Ussher from Labuan:—"Is seen everywhere; affects the sea-shore, and even the open sea at times; builds about houses, but also in old trees; frequently perches on old stumps on the sea-beach; and is fond of swampy localities towards evening, when it flies very low." According to Mr. Treacher, the native name is "Layang layang kuckie." Sir Hugh Low sent a quantity of eggs taken in May 1873 in Labuan. He says that it also breeds in fissures of rocks. The eggs are white, covered with small reddish-brown and purple spots, chiefly near the thicker end; one of the eggs is very thickly clouded near the thicker end with reddish and purple; axis 0·7–0·75, diam. 0·5–0·55. Some of the eggs are much less thickly spotted than others, the spots being quite tiny in many of them; in most the reddish shade predominates; but in a few the dots are nearly all pale purple, with some tiny specks of red.

The descriptions are from specimens in the British Museum, and the figure is taken from an individual procured by Mr. Wyatt in Johore, in the Malay Peninsula.

HIRUNDO NAMIYEI (*Stejn.*).

LIU-KIU SWALLOW.

Chelidon namiyei, Stejn. Proc. U. S. Nat. Mus. ix. p. 646 (1886).
Hirundo javanica namiyei, Seebohm, Birds Japan. Emp. p. 142 (1890).

H. similis *H. javanicæ*, sed major.

Hab. in insulis 'Liu Kiu' dictis.

"*Adult male.* Above, except forehead and anterior portion of crown, black, with a strong gloss of steel-blue somewhat inclining to greenish; forehead and anterior half of the crown deep chestnut, the feathers of the latter being bluish black in the centre; lores deep velvety black; cheeks and lower ear-coverts, chin, throat, and fore neck bright tawny hazel, inclining slightly to cinnamon, and becoming somewhat lighter towards the breast; upper half of the ear-coverts and sides of neck bluish black, like the back, this colour descending on the side of the breast, forming a distinct semilune on each side, which partly separates the hazel of the neck from the rest of the under surface, which is of a nearly pure drab, each feather near the middle line of the body broadly, though not very distinctly, margined with white; under wing-coverts and axillaries of a drab colour, similar to that of the breast, but darker; wings and tail above black, with a faint gloss of steel-green; the tail-feathers, except the middle pair, with an oblique oval white spot in the inner web towards the tips, those on the outer pair being the smallest. Total length, according to Namiye, 145 mm.; stretch of wings 325 mm.; wing 118 mm.; longest tail-feathers 58 mm.; furcation of tail 14 mm.; exposed culmen 8·5 mm.; tarsus 10 mm.; middle toe and claw 15 mm."

Hab. Liu Kiu or Loo Choo Islands.

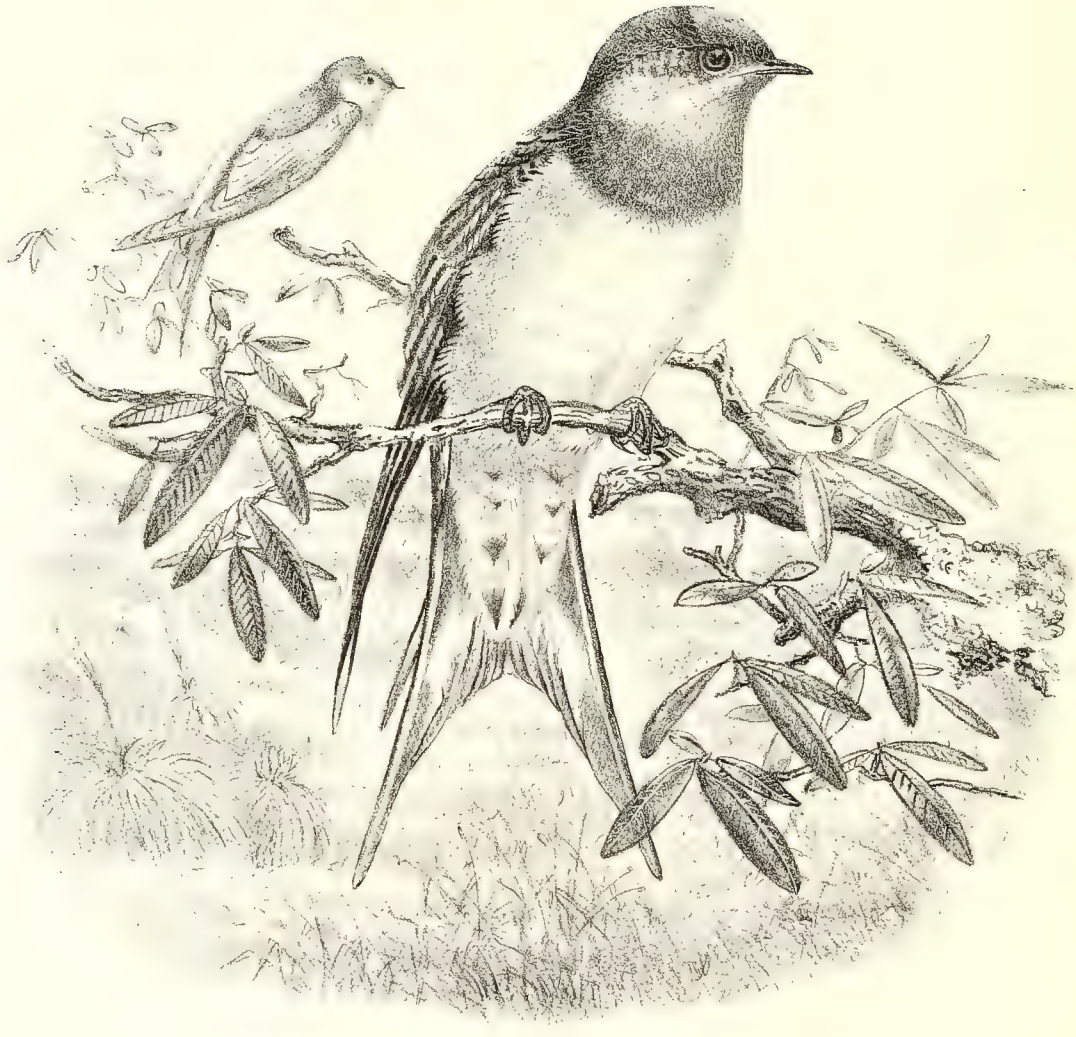
We have not seen this species, which has been described by Dr. Stejneger from a single specimen obtained by Mr. Namiye in the Liu Kiu Archipelago at Urassoimagiri on the island of Okinawa Shima. As Mr. Seebohm has already pointed out, it appears to be merely a somewhat larger race of *H. javanica*, with a wing of 4·6 inches instead of 4·4, which is supposed to be the limit in *H. javanica*.

Dr. Stejneger gives the following note:—"Our new species is much nearer related to *H. javanica* than to *H. neoxena*, but differs from it not only in size, being, as it is, considerably larger, but also in coloration. The gloss of the upper surface is more greenish; the brown of the throat is more chestnut; the grey of the underparts deeper and less tinged with rusty; the under tail-coverts darker and tipped with a pure white

margin, not tinged with rusty as in the Javan bird. It should be remarked, however, that in the unsexed specimen in the Philadelphia Academy these tips are nearly white. The tail of the present species is somewhat more furcate, but, in spite of this, the outer rectrices are less attenuated at the tip."

The greener shades of the upper surface may be due simply to the wearing of the plumage, and the other characters given by Dr. Stejneger do not seem to indicate a race markedly distinct from *H. javanica*.

The description of this Swallow is copied from the paper of Dr. Stejneger (*l. c.*).



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HIRUNDO NEOXENA

HIRUNDO NEOXENA, *Gould.*

AUSTRALIAN SWALLOW.

Hirundo javanica (nec Sparrm.), Vig. & Horsf. Trans. Linn. Soc. xv. p. 191 (1827); J. E. Gray in Griffith's An. Kingd. ii. p. 95 (1829).

Hirundo pacifica (nec Lath.), J. E. Gray in Griffith's An. Kingd. ii. pl. to p. 96 (1829).

Hirundo neoxena, Gould, P. Z. S. 1842, p. 131; id. B. Austr. fol. ii. pl. 13 (1848); Blyth, Cat. B. Mus. As. Soc. p. 198 (1849); Bp. Consp. i. p. 338 (1850); Cab. Mus. Hein. Th. i. p. 46 (1850); Diggles, Orn. Austr. pl. 22. fig. 1 (1870); Sharpe, Cat. Birds in Brit. Mus. x. p. 144 (1883).

Hirundo frontalis (nec Q. & G.), Gray, Cat. Fissir. Brit. Mus. p. 22 (1848); Cass. Cat. Hirund. Philad. Mus. p. 2 (1853); Gould, Handb. B. Austr. i. p. 107 (1865); Ramsay, Ibis, 1868, p. 275; Gray, Hand-l. B. i. p. 70, no. 812 (1869, pt.); Ramsay, Proc. Linn. Soc. N. S. W. ii. p. 179 (1878).

Hirundo rustica, var. *frontalis*, Seebohm, Hist. Brit. B. iii. p. 172 (1883).

H. minor: uropygio et pileo dorso concoloribus: fronte rufa: gutture quoque rufo: rectricibus intus albo notatis: subcaudalibus pallidè fumosis, subterminaliter nigro cordatim fasciatis.

Hab. in Australiâ.

Adult male. General colour above glossy blue, the mantle slightly varied with greyish-white bases to the feathers; lesser and median wing-coverts like the back; greater coverts, bastard-wing, primary-coverts, and quills blackish brown, externally washed with steel-blue, more distinct on the inner secondaries; tail-feathers blackish, slightly glossed with green, the two centre feathers and the outermost on each side without any spots, the others with a small rounded spot of white on the inner web; frontal band deep brick-red, extending from above each eye; lores dusky blackish; ear-coverts glossy blue like the back; cheeks and throat brick-red, remainder of under surface of body smoky brown from the fore neck downwards; the lower abdomen inclining slightly to ashy whitish; under tail-coverts pale smoky brown with dull whitish edgings and tips, with a heart-shaped subterminal spot of black; under wing-coverts and axillaries pale smoky brown, all edged with pale rufous; quills dusky brown below: "bill and legs black; iris dark brown" (*Gould*). Total length 5·8 inches, culmen 0·3, wing 4·25, tail 2·75, tarsus 0·35.

Adult female. Does not differ from the male.

Young. Similar to the adult, but duller in colour, the rufous of the forehead and throat paler, and the white spots on the tail-feathers much more rounded and not so oblique. The tail likewise is not nearly so forked.

Hab. Nearly the whole of Australia and Tasmania.

The nearest ally of the Australian Swallow is *Hirundo javanica*, a widely spread species over the Malayan subregion and the Moluccas. The Australian bird, however, is a somewhat larger and paler bird, the rufous of the throat being of a brick-red colour and not so deep chestnut, while the smoky brown of the sides of the body has somewhat of a ruddy tinge, and is not nearly so dark as the deep mouse-brown colour of the sides in *H. javanica*, which has also very dark under wing-coverts.

H. neoxena is apparently confined to the continent of Australia, in nearly every part of which country it is found, though its migrations have not yet been strictly accounted for. The following are Mr. Gould's notes on the species :—

"The arrival of this bird in the southern portions of Australia is hailed as a welcome indication of the approach of spring, and is associated with precisely the same ideas as those popularly entertained respecting our own pretty Swallow in England. The two species are in fact beautiful representatives of each other, and assimilate not only in their migratory movements, but also most closely in their whole habits, actions, and economy. It arrives in Tasmania about the middle or end of September, and, after rearing at least two broods, departs again northwards in March; but it is evident that the migratory movement of the Swallow, and doubtless that of all other birds, is regulated entirely by the temperature, and the more or less abundant supply of food necessary for its existence; for I found that in New South Wales, and every country in Australia within the same latitude, it arrived much earlier and departed considerably later than in Tasmania; and Mr. Caley, who resided in New South Wales for several years, and whose valuable notes on the birds of that part of the country have been so often quoted, states that 'the earliest period of the year that I noticed the appearance of *Swallows* was on the 12th of July, 1803, when I saw two; but I remarked several towards the end of the same month in the following year (1804). The latest period I observed them was on the 30th of May, 1806, when a number of them were twittering and flying high in the air. When I missed them at Paramatta, I have sometimes met with them among the north rocks, a romantic spot about two miles to the northward of the former place.' A few stragglers remain in New South Wales during the winter, but their numbers cannot for a moment be compared with those observed in the summer, which have passed the colder months in a warmer climate.

"The natural breeding-places of this bird are the deep clefts of rocks and dark caverns; but since the colonization of Australia it has in a remarkable degree imitated its European prototype, by selecting for the site of its nest the smoky chimneys, the chambers of mills and out-houses, or the corner of a shady verandah; the nest is also similarly constructed, being open at the top, formed of mud or clay, intermingled with grass or straw to bind it firmly together, and lined first with a layer of fine grasses, and then with feathers. The shape of the nest depends upon the situation in which it is built, but it generally assumes a rounded contour in front. The eggs are usually four in number, of a lengthened form; their ground-colour pinky white, with numerous fine spots of purplish brown, the interspaces with specks of light greyish brown, assuming in

some instances the form of a zone at the larger end; they are from eight to nine lines long by six lines broad. At Swan River the breeding-season is in September and October. In the spring of 1862 two nests of this species were sent to me by George French Angas, Esq. These very closely resembled those of our own bird, both in form and materials; they were, however, somewhat more square and more stoutly built. The interior was composed of the usual plastered mud strengthened with a little hair, and thickly lined with the downy feathers of various domestic birds. These nests are now in the British Museum. The following note by Mr. Angas was attached to one of them:—'Built on a rafter of my stable at Collingrove, South Australia: taken Oct. 3, 1861.'"

Mr. E. Pierson Ramsay has published the following account of the species in the neighbourhood of Sydney:—

"Although the present species is strictly migratory, yet it is no easy task to determine the exact date of its arrival or departure, owing to the number of stragglers which remain with us during the whole of the year.

"I believe, however, that the visitants arrive early in July, or perhaps late in June, and leave us again in the end of January and February. After their arrival, and again just before their departure, they may be seen in great numbers flying to and fro over the fields, and often skimming the water-holes and lagoons, but keeping very high, sometimes almost out of sight, during the middle of the day.

"I have frequently observed them, in company with the Fairy Martin (*Petrochelidon ariel*) flying over the lawn of the inner domain in Sydney. Tree-Swallows (*Petrochelidon nigricans*) also accompany this species in search of food. We met with all three species mixed up in one immense flock, during December 1864, at Lake Bathurst; here they were following in our wake as we walked through the rushes on a small island, obtaining a rich feast on the small *Libellulæ* which flew up in countless numbers at every step we took. The pupa-cases of these insects were lying piled up between the rushes to the height of two, and even three feet, while the edges of the island at dusk were alive with the pupæ crawling out of the water.

"The proper breeding-season of *Hirundo neoxena* is during the months of August and throughout to the end of December; stragglers, however, may be found breeding almost at any time. I have found them building in the Dobroyde stables, both in the months of February and June; and on April 17th, 1864, I took a nest with fresh eggs from the same buildings.

"In choosing a site for the nest they seem to be less particular than in their time for breeding. Almost any building will serve them where they can obtain a horizontal beam or ledge. On this they place their round bowl-shaped nest, the wall of which is composed of pellets of mud, mingled with grass, and securely fastened on the beam. As soon as the mudwork is dry, it is warmly lined with grasses, horsehair, or feathers; and the nest is then ready for the eggs, which are usually from three to five in number, ·75 inch in length, by ·5 in breadth. The ground-colour is of a delicate white, having

numerous dots and freckles of yellowish brown and faint lilac sprinkled over the whole surface, but more thickly at the larger end. The nests are 4 to 6 inches wide, by 2·5 inches deep.

"Sometimes a band of this species and the Fairy Martin will take possession of the upper story of some deserted house, the latter building their long flask-shaped nests in clusters under the eaves, while the former enter at the windows and take possession of the cross beams and rafters. I have seen both species breeding under the same roof at the Glebe, Sydney.

"In 1858, while fishing off a small steamer, which, having been out of use for some months, was moored a few hundred yards from the north shore, in the Sydney harbour, I observed a pair of these Swallows fly round the boat, and frequently dive underneath the paddle-box. After a long search I discovered their nest, which was composed of black pitchy mud, lined with seaweed and feathers. It was placed upon one of the horizontal beams of the paddle-box, and contained three young ones, about half-fledged. The man in charge informed me that the nest had been made when the steamer was lying lower down the harbour, and upon its being tugged to where it then lay the birds flew round and round it the whole time, evidently in a great state of excitement.

"Several pairs have for some time past taken possession of an old bathing-house at Dobroyde, where every year they build on the lower beams, within a few inches of high-water mark: these nests are always composed of black pitchy mud, mixed with seaweed, obtained, I have no doubt, from the flats at low tide; the lining consists of soft dry pieces of bleached seaweed."

The description is from the British Museum 'Catalogue,' and the figure in the Plate has been drawn from a specimen in Mr. Seebohm's collection.



C.W.W del

Mintern Bros. imp

HIRUNDO ANGOLENSIS.

HIRUNDO ANGOLENSIS, *Bocage*.

ANGOLA SWALLOW.

Hirundo angolensis, Bocage, Jorn. Lisb. 1868, p. 47; Sharpe, Proc. Zool. Soc. 1869, p. 567, pl. 43; Bocage, Jorn. Lisb. 1869, p. 339; Gray, Hand-l. B. i. p. 69, no. 794 (1869); Sharpe, P. Z. S. 1870, p. 307; id. Cat. Afr. B. p. 46 (1871); Bocage, Orn. Angola, p. 180 (1881); Sharpe, ed. Layard's B. S. Afr. p. 364 (1883); id. Cat. Birds in Brit. Mus. x. p. 145 (1885).

H. tergo purpurascenti-cæruleo; pileo dorso concolore; fronte rufâ; alâ 4·7, ultra caudam productâ; rectricibus intùs albo notatis, maculis albis magnis, subcaudalibus fumosis.

Hab. in provinciâ Angolensi Africæ occidentalis.

Adult male. General colour above brilliant steel-blue, the wing-coverts like the back; greater coverts, bastard-wing, primary-coverts, and quills black, externally steel-blue, slightly glossed with green; tail-feathers blue-black, with a large ovate mark of white on the inner web, somewhat decreasing in size towards the centre of the tail; forehead chestnut; lores and feathers in front of the eye velvety black; ear-coverts steel-blue, like the crown; cheeks, throat, and chest chestnut, the sides of the latter steel-blue, forming a crescent, which, however, does not meet across the chest; remainder of under surface of body smoky brown, darker on the sides of the body, somewhat whiter on the centre of the abdomen; vent washed with rufous; thighs and under tail-coverts smoky brown, the latter tipped with reddish white, the long ones with a subterminal bar of blue-black; axillaries and under wing-coverts dark smoky brown; quills blackish below. Total length 6 inches, culmen 0·4, wing 3·9, tail 2·35, tarsus 0·4.

Hab. Angola and Mossamedes.

The range of this Swallow appears to be very limited, as it has not been met with hitherto outside the limits of the Portuguese province of Angola in Western Africa. It was originally discovered by the well-known traveller Anchieta at Pungo Andongo and Ambaca in Angola proper, and the late Mr. Monteiro also procured specimens at Ambriz in March and April 1869. Senhor Anchieta afterwards met with it at Huilla in Mossamedes, but it has not been observed south of the river Cunéné.

It is easily distinguished from *Hirundo rustica*, not only by the different proportions of the wings and tail, but by the smoky-brown colour of the lower parts. In form it very much resembles *H. lucida* from Senegambia, but is altogether of a duller blue, and is easily recognized from that species by the colour of the under tail-coverts. Its real allies are to be found in the Eastern species *Hirundo javanica* and *H. neoxena*; but from

these birds it may also be distinguished by the large size of the white markings on the inner web of the tail-feathers.

The figure has been drawn from a specimen in the British Museum, procured by Senhor Anchieta at Pungo Andongo, and the description is taken from the same bird.



Mintern Bros imp.

HIRUNDO ARCTICINCTA.

MOUNT-ELGON SWALLOW.

Hirundo arcticincta, Sharpe, Ibis, 1891, p. 119, 1892, p. 305.

H. similis *H. angolensi*, sed pectore medio abdomineque purè albis, et subcaudalibus brunneis latè albo-marginatis distinguenda.

Hab. in monte "Elgon" dicto Africæ orientalis centralis.

Adult male. Glossy blue above, with a chestnut forehead and rufous throat; sides of face and a narrow line encircling the throat blue like the back; rest of under surface brown, with the centre of the breast and abdomen white; under tail-coverts brown, tipped with white; tail-feathers with a large white mark on all but the centre ones: "feet brown; iris brown" (*F. J. Jackson*). Total length 5·8 inches, culmen 0·4, wing 4·75, tail 2·7, tarsus 0·4.

Adult female. Similar to the male in colour. Total length 5·8 inches, culmen 0·4, wing 4·8, tail 2·4, tarsus 0·4.

Hab. Mount Elgon, East Central Africa.

It is very interesting to find in the present species a close ally of a Swallow which has hitherto only been known from Angola. It, indeed, very closely resembles *H. angolensis*, but has a whiter abdomen and also white-tipped under tail-coverts. Mr. Jackson tells us that he found the present species breeding in a large cave on the south side of Mount Elgon at an elevation of 6000 feet. He did not notice it elsewhere, but thinks that it is not likely to be met with above that elevation.

The description is taken from the type specimen in Mr. Jackson's collection, and this individual has been figured in the Plate.



HIRUNDO LUCIDA.

HIRUNDO LUCIDA, *J. Verr.*

SENEGAMBIAN CHIMNEY-SWALLOW.

Hirundo lucida, J. Verr. J. f. O. 1858, p. 42; Hartl. J. f. O. 1861, p. 103; Gray, Hand-l. B. i. p. 68, no. 792 (1869); Sharpe, P. Z. S. 1869, p. 567; id. P. Z. S. 1870, p. 308; id. Cat. Afr. B. p. 46 (1871); Bouvier, Cat. Ois. etc. coll. Marche, p. 9 (1875); De Rochebrune, Faun. Sénég., Ois. p. 218 (1884); Sharpe, Cat. Birds in Brit. Mus. x. p. 145 (1885).

H. tergo cæruleo, uropygio dorso concolore; fronte rufâ; gutture rufo; torque pectorali chalybeo interrupto; abdomine et subcaudalibus purè albis.

Hab. in prov. Gambensi Africæ occidentalis.

Adult. Above most brilliant steel-blue, inclining to indigo; wing-coverts dark blackish brown, glossed with steel-blue above, the innermost cubital feathers with a white spot on the inner web; tail deep steel-blue, all the feathers except the two middle ones for the most part pure white on the inner web, so that the tips and the part immediately edging the graduated extremity of the feather are black; a distinct though narrow frontlet and the entire throat deep brick-red; a band across the breast, below the red throat, bright steel-blue, broad at the sides and narrow in the centre of the breast; rest of the under surface of the body pure white, with a few dusky feathers on the flanks, and marked with narrow blue lines, more distinct in some specimens than in others; bill and feet black. Total length 6 inches, culmen 0·35, wing 4·25, tail 2·9, tarsus 0·4.

Hab. Senegambia.

The name of *lucida* is very appropriate for this Swallow, on account of the intense brilliancy of the steel-blue of the upper surface. The pure white breast and under tail-coverts, as well as its small size and the large amount of white on the tail, are also characters which easily distinguish it from *Hirundo rustica* and the rest of the true Chimney-Swallows.

It is a very rare species in collections, and nothing is known of its changes of plumage or of the coloration of the young. One bird in the British Museum, and formerly in Mr. Sharpe's African collection, is not so brilliantly coloured, and has a smoky-brown shade on the sides of the body. This has before been considered by us to be an immature bird, but it lacks the pale edgings to the secondary quills which generally accompany the plumage of a young Chimney-Swallow, and thus it may ultimately prove to be an adult female bird. Accompanying the smoky-brown underparts there are traces of narrow dusky shaft-lines on the under tail-coverts, which are

absent in the full-plumaged specimens; on the latter also can be distinguished some bluish streaks, which, if developed in all adult birds, would prove to be a strongly-marked character for the species.

As far as is known at present this elegant little Chimney-Swallow is confined to Senegambia, whence came the four specimens in the British Museum. Dr. de Rochebrune states that it is rare, the localities given by him being Gambia, Casamence, Mélacorée, Sedhiou, and Bathurst; the native name is stated to be "*N'Jargaigne*."

The description is taken from the British-Museum 'Catalogue.' The figure is drawn from a specimen in Capt. Shelley's collection from Senegambia.

←→ Migratory.
←/→ Bird of passage.
←⊖→ Remains locally during the winter.
←Δ→ Transplanted.
←*→ Winter resident.

Δ Acclimatized
◯ Permanent
(◯) Changeable
∼ Visitor
≈ Accidental

	Nearctic Region.										Neotropical Region.							Palæarctic Region.			
	Arctic Sub-Region.		Cold Temperate Sub-Region.				Warm Temperate Sub-Region.				Antillean Sub-Region.	Central American Sub-Region.		Sub-Andean Sub-Region.	Amazonian Sub-Region.	Brazilian Sub-Region.	Patagonian Sub-Region.	Arctic Sub-Region.	Eurasian Sub-Region.		
							Humid Province.		Arid Province.												
	Arctic Province.	Alaskan Arctic Province.	Hudsonian Province.	Canadian Province.	Sitkan Province.	Aleutian Province.	Appalachian Sub-Province.	Austro-Riparian Sub-Province.	Campestrian Sub-Province.	Sonoran Sub-Province.		Mexican Province.	Isthmian Province.						European Province.	Central Siberian Province.	East Siberian Province.
6. *H. tahitica* ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
7. *H. javanica* ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
8. *H. namiyei* ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
9. *H. neoxena* ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
10. *H. angolensis* .	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
11. *H. arcticincta*.	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
12. *H. lucida* ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	.	..	..	.

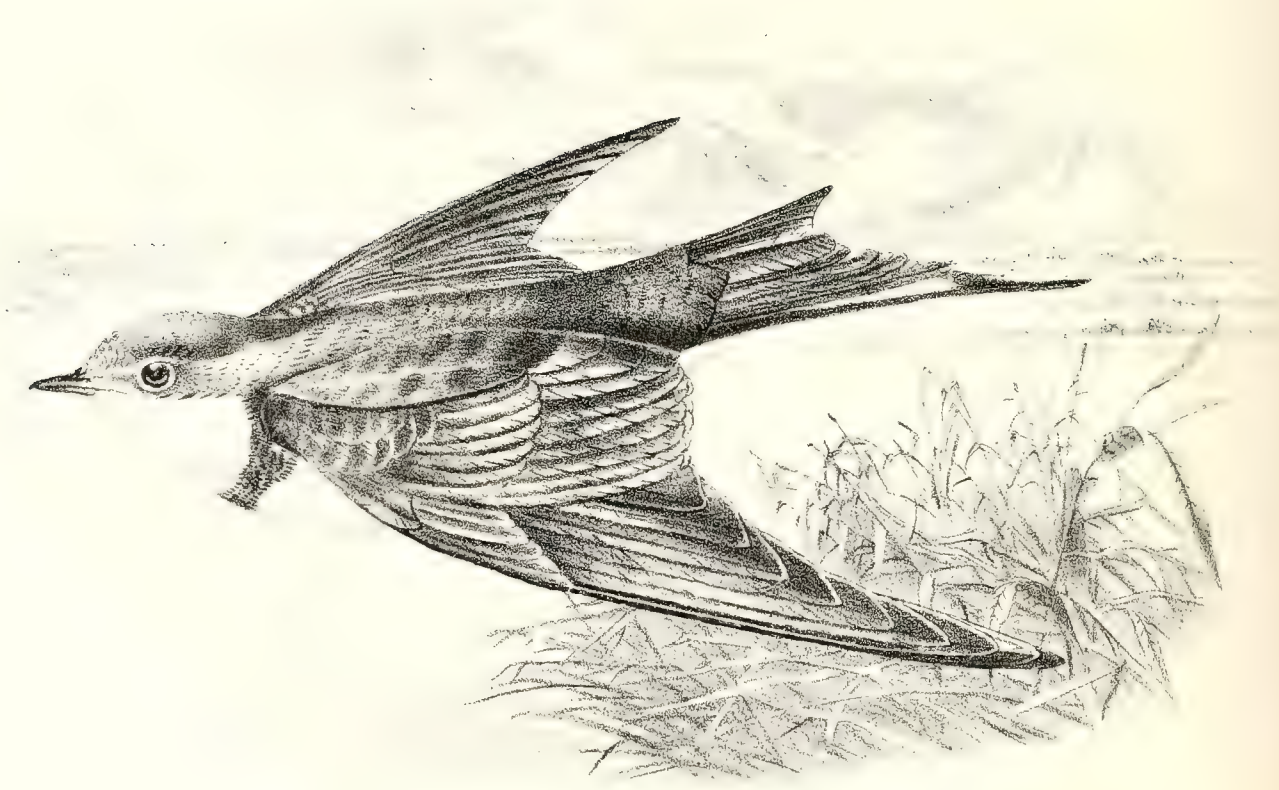
THE GENUS HIRUNDO (*continued*).

V Guest.

† Wanderer.

□ Rarely
⊞ Generally } nesting.
⊞ In colonies

		Ethiopian Region.										Indian Region.					Australian Region.							
siatic 1.	Mongolian Province.	Himalo-Caucasian Sub-Region.	Saharan Sub-Region.	Soudanese Sub-Region.	West-African Sub-Region.	Abyssinian Sub-Region.	East-African Sub-Region.	South-African Sub-Region.	Cape Province.	Natalese Province.	Cameronian Sub-Region.	Lemurian Sub-Region.	Indian Peninsular Sub-Region.	Indo-Chinese Sub-Region.	Indo-Malayan Sub-Region.	Himalo-Malayan Sub-Region.	Himalo-Chinese Sub-Region.	Celebean Sub-Region.	Moluccan Sub-Region.	Papuan Sub-Region.	Australian Sub-Region.	New-Zealand Sub-Region.	Fijian Sub-Region.	Hawaiian Sub-Region.
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	○	..	..	○	
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	○	..	..	○	○	○				
..	..	..	..	..	..	..	..	..	..	..	..	..	..	○										
..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	.	..	○			
..	..	..	..	○	..	..	○																	
..	..	..	..	..	..	..	..	..	..	..	○													
..	..	..	..	○																				



C.W.W del

Mintern Bros. imp.

HIRUNDO ALBIGULARIS

HIRUNDO ALBIGULARIS, *Strickl.*

WHITE-THROATED SWALLOW.

Hirundo rufifrons (nec Vieill.), Less. Traité d'Orn. p. 268 (1831); Grill, Zool. Anteckn. p. 35 (1858).

Hirundo albigularis, Strickl. Contr. Orn. 1849, p. 17, pl. 15; Cass. Cat. Hirund. Mus. Philad. Acad. p. 2 (1853); Sharpe, P. Z. S. 1870, p. 308; id. Cat. Afr. B. p. 46 (1871); Ayres, Ibis, 1873, p. 281; Fischer & Reichenow, J. f. O. 1879, p. 344; Bocage, Orn. Angola, p. 185 (1881); Butler, Feilden, & Reid, Zool. 1882, p. 251; Salvin, Cat. Strickl. Coll. p. 150 (1882); Sharpe, ed Layard's B. S. Afr. p. 364 (1882); id. Cat. Birds in Brit. Mus. x. p. 146 (1885); Seebohm, Ibis, 1887, p. 342.

Hirundo albigula, Bp. Consp. i. p. 338 (1850); Gurney, Ibis, 1865, p. 264; Layard, B. S. Afr. p. 55 (1867); Gray, Hand-l. B. i. p. 68, no. 787 (1869); Ayres, Ibis, 1876, p. 424, 1878, p. 285, 1880, p. 260.

Hirundo ambigua, Bocage, Orn. Angola, p. 186 (1880).

H. uropygio pileoque chalybeo-nigris, dorso concoloribus: fronte castaneâ: gulâ albâ: torque præpectorali chalybeo-nigro.

Hab. in Africâ meridionali.

Adult male. Above glossy steel-blue; quills blackish, with a blue gloss on the upper surface; the innermost greater coverts marked on the interior web with a greyish-white spot, which is generally hidden by the scapulars; tail blue-black, the two centre feathers unspotted, but all the others marked on the inner web with a large patch of white; forehead deep chestnut; lores black; sides of face and ear-coverts steel-blue; throat, cheeks, and sides of the neck white; below the throat a broad band of glossy steel-blue feathers, broad at the sides and narrow in the centre of the breast; the rest of the under surface of the body greyish ash-colour, the under tail-coverts whiter at the ends, with occasionally a tiny subterminal black spot; under wing-coverts and axillaries like the breast, the latter whiter on their margins; bill black; feet dark brown. Total length 6·5 inches, culmen 0·15, wing 5·2, tail 3·05, tarsus 0·15.

The *adult female* is similar in plumage to the male, and has almost exactly the same dimensions.

The *young* bird is unknown to us. The collar on the fore neck is very often so much broken up in the centre as to become almost interrupted, and then the species approaches very closely to *H. æthiopica*. As a rule, the males have a broader and more perfect præpectoral collar; but even in some of the most beautiful specimens the collar is as imperfect as in most of the females. The fine steel-blue gloss which characterizes the full-plumaged birds suffers much deterioration during the breeding-season, and the gloss becomes of a dull purplish shade.

The series in the British Museum measure as follows, and the dimensions may be compared with those of *H. æthiopica* in the same collection :—

α. Hirundo albigularis.

		Total length.	Wing.	Tail.	Tarsus.
		in.	in.	in.	in.
a. Ad.	Cape Colony (*E. L. Layard*)	6·4	5·0	2·85	0·5
b. ♀ ad.	Knysna, Jan. 24 (*C. J. Andersson*)	5·7	5·0	2·6	0·45
c. ♂ ad.	„ „ „	6·0	5·05	2·7	0·45
d. Ad.	Natal	6·4	5·15	2·9	0·45
e. ♂ ad.	Natal (*T. Ayres*)	5·8	4·9	2·6	0·45
f. ♂ ad.	Transvaal (*T. Ayres*)	6·0	5·2	3·0	0·45
g, h. ♂ ad.	Potchefstroom, Aug. (*T. Ayres*)	6·2–6·5	5·05–5·2	2·65–3·05	0·45
i. ♀ ad.	„ „ „	6·0–6·2	4·9–5·2	2·55–2·95	0·45

β. H. æthiopica.

		Total length.	Wing.	Tail.	Tarsus.
		in.	in.	in.	in.
♀ ad.	Barakit, Tigre (*W. T. Blanford*)	5·2	4·35	2·2	0·4
♂ ad.	Kokai, Bogos (*W. Jesse*)	5·1	4·2	2·3	0·4
♀ ad.	Bejook, Bogos (*W. Jesse*)	5·6	4·4	2·5	0·4
Ad.	Bogos (*Esler*)	5·7	4·25	2·4	0·35
Ad.	Abyssinia	5·2	4·2	2·3	0·4
♂ ad.	Khartoum	5·8	4·15	2·7	0·35
Ad.	R. Gambia	5·3	4·15	2·4	0·4
Juv.	Abeokuta	5·0	4·0	1·8	0·4
♂ ad.	Shonga, R. Niger (*H. O. Forbes*)	5·5	4·1	2·4	0·4
Ad.	Lokoja, R. Niger (*H. O. Forbes*)	5·2	4·25	2·4	0·4

Hab. South Africa generally, to Angola on the west coast and to the Zanzibar district in Eastern Africa.

This is a South-African bird, and, although it is a common and well-known species, there still remains a great want of knowledge as to its migrations. It was not exactly described till 1840, though many authors believe that Levaillant's plate of the 'Hirondelle à front roux' was intended for this species. On this plate Vieillot founded his name of *Hirundo rufifrons*, a title frequently adopted for the species; but the figure is so inaccurate and is so much more like that of the Common Chimney-Swallow, that it is impossible to admit it as a representation of *H. albigularis*.

As will be seen from the notes quoted below, the present species occurs in South Africa in August, breeds in September, October, and November, and leaves for the north along with the European Chimney-Swallow (*H. rustica*); but where it winters is at present unknown. Drs. Fischer and Reichenow record a specimen from Malindi, in East Africa, in June, and as they mention *H. æthiopica* at the same time and from the same place, we may take it for granted that the ranges of both species unite on the east coast of Africa, and that it is here that *H. albigularis* probably winters.

Mr. E. L. Layard has given the following note on the species in the Cape Colony:—

"If any of our Cape Swallows could be mistaken for the European species, this would in all probability be the deceiver. In fact, for a long time we *were* deceived by it, until one bright sunny morning, while watching the flight of some of these lovely aerial creatures, it struck us that the blue of the back and white of the breast looked brighter than in the old-country bird. For some time they confined their course to the narrow river, on the bridge of which we stood, but at last one strayed for an instant over the bank; a well-directed shot laid him on the green sward, and we instantly recognized the supposed 'Hirondelle à front roux' of Le Vaillant. They were breeding beneath the bridge, but we were unable at the time to get at the nests, which we have since visited, and found to resemble those of the European bird in shape and structure. Le Vaillant says he only found this species in the rainy season (our winter). In this he is most undoubtedly mistaken, so far as the Cape Peninsula is concerned. No other Swallow than *C. fuligula* remains during this time, whatever they may do in the more inland districts; but from all we can gather from our correspondents, we have no reason to think that even there *H. albigularis* is to be found in the winter.

"My son found the species breeding at Grootevadersbosch, near Swellendam, and together we procured its nest at the Berg river in the middle of September. The nest was a half-cup attached to a beam in a stable, and was composed of mud and lined with hay and feathers. The eggs are very thin, white (pink when containing the yolk), and spotted, chiefly at the obtuse end, in the shape of a ring, with minute dots of green, brown, and yellow, with here and there a larger spot. In shape they are sometimes much pointed, at other times they are very round; axis 11″, diam. 7″."

Both Victorin and Andersson procured this Swallow in the Knysna, the former from August to October, the latter in January. In Natal, writes Mr. Ayres to Mr. J. H. Gurney, "these pretty Swallows are not nearly so common as the Summer-Swallow (*H. rustica*); they appear to arrive at the same time as the latter birds, and to leave with them, and the two species are frequently to be seen hunting in company; their flight is, however, I think, more rapid. The tawny appearance of the breasts of the specimens sent is, I believe, merely caused by their having constantly perched on a horizontal iron bar which supported the chimney of a house, and was passed through the roof."

In the "Notes" from Natal, published by Colonels Butler and Feilden and Captain Savile Reid, we find an account of the present species:—

"Appeared at Newcastle early in September in numbers, and noted all the way to the coast. Numerous at Richmond Road in December. The nest is open, of a half-cup shape, built of mud, warmly lined with grass and a large quantity of feathers, and is placed on the under surface of rocks, usually over water. Eggs four, measuring 0·75 in. by 0·55 in., white, with small blotches and spots of reddish brown, most numerous towards the obtuse end. Nests were taken by Butler and Reid in October and

November; one found by Butler was on a cliff about one hundred yards from the water, on a sloping hill-side. When the nest is destroyed by accident or removed, the birds usually commence a fresh one on the same foundation within a few days. Reid took one on the 15th October, and on the 21st found a new nest ready for eggs in the same place."

In the Transvaal Mr. Ayres states that it breeds sparsely. It is the first of the migratory Swallows to appear at Potchefstroom. "Two specimens of this species were shot on the 19th of August. By the 4th of September the Swallows were plentiful along the river, and by 18th of September they were pairing; a month later they were more dispersed and not seen so plentiful. They feed principally over the marshes, but often rest upon the ant-heaps in the open country." The same gentleman found them fairly plentiful on his visit to the Lydenburg district.

The late Mr. Andersson has the following note on *Hirundo rustica*:—"This well-known species is pretty common in Damara Land and Great Namaqua Land during the rainy season, and I have found it very numerous at Walvisch Bay and in other localities near the coast. In uncivilized parts of Africa these Swallows affix their nests to some projection of a rock or trunk of a tree, or occupy cavities in rocks or banks." On this point Mr. Seebohm observes:—

"Andersson, in his 'Birds of Damara Land,' remarks of *H. rustica* that it breeds in that country; but there can be little doubt that the Swallow which he supposed to be our species was the White-throated Swallow (*H. albigularis*), which he does not mention, and which he probably mistook for the female of our bird. His further remark that in consequence of the scarcity of houses it breeds in rocks and *trees*, adds still more doubt to the accuracy of his observations. I have seen the Common Swallow breeding under overhanging cliffs in the Dobrudscha, but I never heard of its having been found nesting in a tree."

In favour of Mr. Seebohm's theory we may mention that the Knysna specimens in the British Museum were originally labelled by Mr. Andersson "*H. rustica*;" but it is evident that he found out his mistake, for in his own handwriting the name "*H. rufifrons*" has been substituted. At the time of his writing the book on the Birds of Damara Land he must have been perfectly aware of the differences between these two Swallows, and we have never seen a specimen of *H. albigularis* from Damara Land. At present, therefore, we are not inclined to accept Mr. Seebohm's correction of Mr. Andersson's supposed mistake, though we admit that his account of the nesting of *H. rustica* in Damara Land is very similar to that of *H. albigularis* in Natal, as recorded by Colonel Butler.

In the Lisbon Museum is a single specimen of this species, from Angola, procured by Mr. Furtado d'Antas. We have already alluded to its occurrence at Malindi, in East Africa.

Our descriptions are taken from the series in the British Museum, and the figure in the Plate from a bird in Captain Shelley's collection.



W. W. del.

Mintern Bros imp.

HIRUNDO ÆTHIOPICA.

HIRUNDO ÆTHIOPICA, *W. Blanf.*

BLANFORD'S SWALLOW.

Hirundo rufifrons (non V.), Des Murs in Lefebvr. Voy. Abyss. Zool. p. 78 (1845); Heugl. J. f. O. 1861, p. 420, 1868, p. 168; Hartm. J. f. O. 1864, p. 152.

Cecropis rufifrons (non V.), Vierth. Naum. 1853, p. 21; Brehm, J. f. O. 1853, p. 453, Extrah. p. 96; Heugl. Syst. Uebers. p. 16; Vierth. Naum. 1857, p. 110; Brehm, Reis. Habesch, p. 209 (1863).

Hirundo albigularis (nec Strickl.), Heugl. Orn. N.O.-Afr. i. p. 153 (1869).

Hirundo æthiopica, Blanf. Ann. & Mag. Nat. Hist. iv. p. 329 (1869); Gray, Hand-l. B. i. p. 401, no. 794*a* (1869); Blanf. Geol. & Zool. Abyss. p. 347, pl. 2 (1870); Finsch, Tr. Z. S. vii. p. 218 (1870); Sharpe, P. Z. S. 1870, p. 309; id. Cat. Afr. B. p. 46, no. 432 (1871); Antin. & Salvad. Viagg. Bogos, p. 72 (1873); Cab. J. f. O. 1878, p. 223; Fischer & Reichen. t. c. p. 257; iid. op. cit. 1879, p. 344; Shelley, Ibis, 1883, p. 547; Fischer in Madarasz, Zeitschr. ges. Orn. i. p. 357 (1884); Sharpe, Cat. Birds in Brit. Mus. x. p. 146 (1885).

H. uropygio pileoque cæruleis, dorso concoloribus; fronte castaneâ; gulâ albicante vel pallidè fulvâ: torque præpectorali interruptâ.

Hab. in Africâ septentrionali-orientali et orientali et in Africâ occidentali cis-equatoriali.

Adult female (type of species). General colour above purplish blue, slightly varied with greyish white bases to the feathers of the upper mantle; wing-coverts like the back, with a greyish-white spot on the inner web of the innermost greater coverts; bastard-wing, primary-coverts, and quills blackish, externally glossed with steel-blue; upper tail-coverts like the back; tail-feathers blackish, glossed with steel-blue, all but the centre feathers having a rounded white spot on their inner web, rather more ovate on the outermost feather; crown of head like the back, with a broad frontal band of rufous; lores blackish; ear-coverts black, glossed with blue; cheeks and throat pale rufescent buff; remainder of the under surface creamy white, with a crescentic mark of purplish blue on the sides of the chest, forming a half-collar; sides of body slightly shaded with ashy; thighs and under tail-coverts creamy white; under wing-coverts and axillaries like the breast; quills below dusky, a little more ashy along the inner edge: "bill and feet black; iris brown" (*Fischer*). Total length 5·2 inches, culmen 0·35, wing 4·3, tail 2·2, tarsus 0·4.

The *adult male* does not differ in colour from the female. Total length 5·7 inches, culmen 0·35, wing 4·1, tail 1·55 (longest feather 2·6), tarsus 0·4.

The young bird differs from the adult in being dusky blackish, merely glossed with purplish blue, with obsolete pale edges of sandy brown, the quills and tail-feathers margined with ashy whitish at the tips; base of forehead and a line over the eye pale rufous, but not forming a frontal band;

underneath as in the adults, but the under wing-coverts washed with pale rufous-buff like the throat.

Hab. North-eastern Africa, southwards from Bogos-land to the Zanzibar region on the east coast. West Africa, from Senegambia to the Niger.

This is the northern representative of the large *Hirundo albigularis* of the Cape. In North-eastern Africa Von Heuglin says that it occurs from 20°–21° north latitude southwards along the Nile and in Abyssinia, reaching in the latter country to at least 10,000 feet; it is less common on the Red Sea. In Bogos-land it makes its appearance with the first summer rain and stays until December. Mr. W. T. Blanford, who was the first naturalist to discriminate the species, met with it at Barakit in Tigrè, during the Abyssinian expedition. Mr. W. Jesse obtained specimens at Kokai and Bejook in the Bogos country, and the late Marquis Antinori at Keren in the same country. According to the latter observer, it arrives in Bogos-land in May and leaves in August. It does not seem to have been met with by the expedition to Shoa commanded by the same intrepid explorer.

In East Africa it was first obtained by the late Dr. Hildebrandt, who procured specimens at Mombasa, and says that it was sparsely spread over the whole country visited by him. Dr. Fischer also met with it in the same district, where it is called by the natives "*M'barui.*" The latter naturalist also procured the species at Malindi, and during his last expedition he says that it was found on the steppes between Kilima'njaro and Maeru mountain. It was the only Swallow seen by him everywhere from the coast to the Naiwascha Lake, and it only occurred singly. He found it nesting at Maúrui at the end of February, where a pair had built in the hole of a tree-stump standing out of the water. The late Dr. Böhm believed that he saw the present species at Zanzibar.

According to Dr. Vierthaler, it breeds near Khartoom in August and September, building its nest against the ceilings of rooms, exactly as *H. rustica* does in Europe, the nest being open above. It lays three eggs, which are white spotted with rufous. He speaks of this species as the common Swallow of North-eastern Africa, and states that it arrives in March and leaves at the beginning of November. He found it breeding northwards from New Dongola, but not in Northern Nubia or Upper Egypt, where its place is taken by *Hirundo savignii*. The nest resembles that of *H. rustica*, and the eggs are similarly coloured.

Dr. Hartmann (J. f. O. 1884, p. 152) met with two pairs of this Swallow breeding in a hole in an *Adansonia* tree. The nests were plastered together with the mud from the Fûlâh, and contained respectively three and four spotted eggs. In the parts of Equatorial Africa visited by the above naturalist, this elegant little bird was the House-Swallow of the country; and as it could not always find suitable breeding-places in the low straw huts of the Fundj Negroes, it often occupied the holes of trees as well as clefts in the rocks, in which it placed its mud-built nest.

During his expedition to Bogos-land, the late Marquis Antinori found the species inhabiting the huts of the natives and building its nest on the beams which supported the roof, and many couples constructed their nests in a large hut belonging to the mission at Keren. A pair built in the hut of the traveller, and made a nest below the frame of a net on which the bird-skins were dried and which was placed above his bed. The Swallows seemed delighted to live in this place, and cheered the travellers in the early morning with their varied notes. No notice was taken by the birds of the noise made by the inhabitants of the hut, and the young were duly hatched, but were ultimately found dead in the nest without any apparent cause.

In West Africa it has been procured by the late Mr. W. A. Forbes at Shonga and Lukoja on the river Niger, and Mr. F. Nicholson has received a specimen from Abeokuta, which he presented to the British Museum. Dr. de Rochebrune does not include it among the birds of Senegambia, but a specimen is in the British Museum from the last-named country. This specimen was formerly in the Sharpe collection, to which it was presented by Mr. E. L. Layard. The exact circumstances under which it was obtained by Mr. Layard were not recorded at the time, but we believe that he procured it on one of his homeward journeys from the Cape to England.

The specimen figured is in Capt. Shelley's collection, and the description is from the type specimen in the British Museum.



W.W. del

Mintern Bros. imp.

HIRUNDO LEUCOSOMA

HIRUNDO LEUCOSOMA, *Swains.*

WHITE-BODIED CHIMNEY-SWALLOW.

Hirundo leucosoma, Swains. B. W. Afr. ii. p. 74 (1837); Fraser, P. Z. S. 1843, p. 51; Gray, Gen. B. i. p. 58 (1845); id. Cat. Fiss. Brit. Mus. p. 24 (1848); Bp. Consp. i. p. 339 (1850); Hartl. J. f. O. 1853, p. 398; id. Orn. W.-Afr. p. 27 (1857); id. J. f. O. 1861, p. 103; Sharpe, Ibis, 1869, p. 188; Gray, Hand-l. B. i. p. 70, no. 827 (1869); Sharpe, P. Z. S. 1870, p. 309; id. Cat. Afr. B. p. 46 (1871); Shelley & Buckley, Ibis, 1872, p. 288; Ussher, Ibis, 1874, p. 62; De Rochebr. Faun. Sénég., Ois. p. 218 (1884); Sharpe, Cat. Birds Brit. Mus. x. p. 147 (1885).

Chelidon leucosoma, Boie, Isis, 1844, p. 171.

Hemicecrops leucosoma, Bp. Rivist. Contemp., Torino, 1857, p. 4.

H. tergo cæruleo, uropygio dorso concolore; fronte pileo concolore; gutture et corpore toto inferiore purè albis; tectricibus alarum majoribus intimis et secundariis intimis externè albis, fasciam longitudinalem albam formantibus.

Hab. in Africâ occidentali cis-equatoriali.

Adult. Above dark glossy blue; a white longitudinal bar on the wing, which is produced by the inner greater coverts and secondaries being for the most part broadly edged externally with pure white; tail graduated, dark blue above, dusky beneath, all the feathers except the two middle ones marked with white on the inner web, the exterior feathers having a large oval spot, which gradually gets smaller on the feathers as they approach the centre of the tail, till in the two nearest to the central feathers it is reduced to a small oval spot; entire under surface with the under wing- and tail-coverts pure white; bill and feet black. Total length 4·8 inches; of bill from front 0·3, from gape 0·45; wing 4, tail 1·8, tarsus 0·3, middle toe 0·4, hind toe 0·2, lateral toe 0·2.

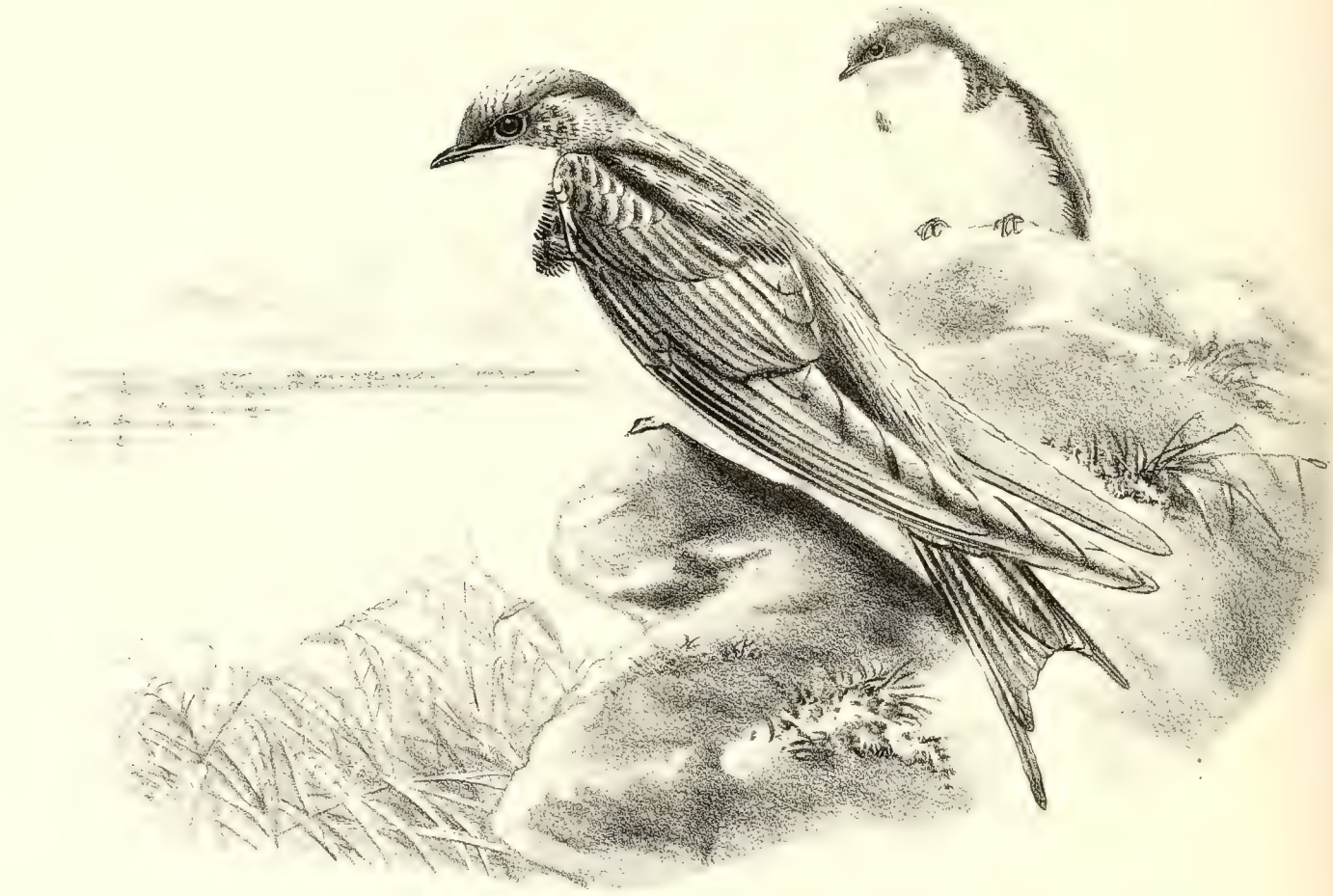
Hab. West Africa, from Senegambia to Gaboon.

This very distinct species of Chimney-Swallow was first described by Swainson from a Gambian specimen; and Dr. de Rochebrune states that it has been met with at Casamence, Mélacorée, Zekinkior, and Daranka in Senegambia, but it is rare in that part of West Africa; the native name is, as usual, "*N'Jargaigne*." In the British Museum are specimens from Fantee and from Accra on the Gold Coast, the latter obtained by Capt. Haynes. The late Mr. L. Fraser also procured it in the latter locality; but it appears to be by no means plentiful, as Capt. Shelley and Mr. T. E. Buckley state that they only met with it occasionally. The late Governor Ussher has written the following note:—"Not very common in Fantee, although occasionally met with about

the small native 'crooms,' or hamlets, in the interior. The last specimen I collected for Mr. Sharpe was one of a pair that had selected for their nidification the overhanging rafters of an empty room in a small country-house belonging to the Wesleyan Mission, where I happened to be staying. I have never seen them away from buildings; nor have I observed them in large towns. They are generally met with in pairs, and are graceful and attractive in appearance. They appear to show great solicitude for their young." The most southern locality as yet recorded for the species appears to be Gaboon, whence the late M. Jules Verreaux received a specimen. Dr. de Rochebrune speaks of the latter gentleman as the *discoverer* of the species in Gaboon, as well as at Casamence; but he, of course, means this only in the sense of Jules Verreaux having been the first to record its occurrence in these two localities, as he never personally visited either of them to our knowledge. M. Beaudouin was, we believe, the correspondent of the "Maison Verreaux" at Casamence, and in Gaboon that great establishment had several collectors at different periods.

Nothing is known of the changes of plumage undergone by this species, which is decidedly rare in collections. In the British Museum one specimen is much duller blue, and has not so much white on the wing; this may be the young bird.

The description is taken from the 'Catalogue' of the British Museum; the bird figured is in Capt. Shelley's collection, and was obtained near Accra.



Mintern Bros. imp.

HIRUNDO DIMIDIATA, *Sundev.*

PEARLY-BREASTED SWALLOW.

Hirundo dimidiata, Sundev. Œfv. K. Vet.-Akad. Förh. 1850, p. 107; Hartl. Ibis, 1862, p. 144; Layard, B. S. Afr. p. 56 (1867); id. Ibis, 1869, p. 72; Gray, Hand-l. B. i. p. 71, no. 832 (1869); Sharpe, P. Z. S. 1870, p. 310; id. Cat. Afr. B. p. 46, no. 434 (1871); Gurney in Anderss. B. Dam. Ld. p. 52 (1872); Ayres, Ibis, 1878, p. 285, 1879, p. 291; Shelley, Ibis, 1882, p. 259; Sharpe, ed. Layard's B. S. Afr. p. 366 (1882); Ayres, Ibis, 1884, p. 227; Sharpe, Cat. Birds in Brit. Mus. x. p. 148 (1885); Bocage, Jorn. Lisb. vii. p. 236.

Hirundo scapularis, Cass. Proc. Philad. Acad. pl. 12 (1850); id. Cat. Hirund. Mus. Philad. Acad. p. 2 (1853).

Hemicecrops dimidiata, Bp. Rivist. Contemp., Torino, 1857, p. 4.

Hemicecrops scapularis, Bp. t. c. p. 4.

Hirundo leucosoma (nec Sw.), Grill, Zool. Anteckn. p. 36 (1858).

H. suprà chalybeo-nigra, pileo dorsoque concoloribus: abdomine albo: secundariis haud extùs albis.

Hab. in Africâ meridionali.

Adult. Above purplish blue; quills brownish black, grey on the inner web, the innermost of the greater wing-coverts white, forming a white spot, which, however, is generally concealed by the scapularies; occasionally in very old birds a small white spot also appears on the innermost secondaries; tail brownish black, without any spots, glossed on the upper surface with dark blue, with a faint greenish lustre; entire under surface silky white, having in some specimens a certain woolly appearance, greyish in certain lights; on each side of the upper part of the breast a patch of dark blue feathers: "bill and feet black; iris dark brown" (*Andersson*). Total length 5·5 inches, wing 4·2, tail 2·6, tarsus 0·4.

Young. Not nearly so bright above, and more distinctly tinged with greenish; the white spot on the greater wing-coverts either absent altogether, or, when present, of a dull greyish colour and very little developed.

Hab. South Africa to Mashoona Land on the east and Benguela on the west.

The Pearly-breasted Swallow is very closely allied to *Hirundo leucosoma* of Western Africa, but only shows a small white spot on the inner secondaries instead of the extended white patch on the wing of the latter species.

Mr. E. L. Layard has given the following account of the species:—"This Swallow is very rare in the neighbourhood of Cape Town, but becomes more common on the mainland. It will be as well to treat the peninsula bounded by False and Table Bays

as apart from the continent. The vast tract of land called the Cape Flats, together with Table Bay on the one hand and False Bay on the other, quite shut it off from the mainland, so to speak; and to aid in this isolation the mainland ends in an abrupt precipitous wall of mountains which are only to be passed in one or two places. Doubtless the Peninsula of Table Mountain was once an island, and 'Table' and 'False' Bays part of a strait between. As soon as the hills are reached on the opposite side of Table Bay, this Swallow occurs; and from Swellendam Mr. Cairncross writes:—'It is very common, and builds its nest generally under the thatch of an old mill or stable, which is a quieter refuge than a dwelling-house; the egg is small and white; and tradition says that it drives the Sparrow and House-Swallow (*H. cucullata*) from their nests, occupies them and breeds therein. For this reason it receives no mercy from the farmer, but the eggs and young are destroyed whenever met with.'"

Mr. Layard also found it abundant all along the route as far as Nel's Poort; there it was breeding under the rocks and under the eaves of Mr. Jackson's barn. They construct a nest of mud very similar to that of *H. cucullata*, but without the elongated neck. The eggs, three or four in number, are pure white: axis 7‴, diam. 5‴. He also found it breeding on the Berg River.

On the Orange River, Dr. Bradshaw says that this Swallow is an early arrival, nesting in every house. Victorin procured it at the Knysna, and it extends to the eastern districts of the Cape Colony, as Mr. Layard noticed it at Grahamstown, where it breeds. As before stated, it was first procured by Wahlberg in Natal, but we have not ourselves seen any specimens from that Colony.

In the Eastern Transvaal, Mr. Ayres has seen this Swallow at Rustenberg, where he procured specimens in May and July. He says that they are common in the winter time in that locality, keeping for the most part in pairs. He also records one from the Marico district in August, and he states that on a gusty morning in March, 1882, a good many of these little Swallows appeared near Potchefstroom, and "flew wildly past in the gloaming, apparently in a great hurry." The species was likewise met with by the late Mr. Jameson's expedition on the Umvuli River. Mr. T. Ayres, who accompanied Mr. Jameson, says that they were evidently breeding at the time, as there was mud on the bills of the specimens shot. He writes:—"They either remain here during the winter or are very early in their migration, as I saw them in the Matabele country in June, where no other Swallows were to be seen."

Mr. Andersson gives the following note on the species:—

"Tolerably common in Damara Land, where they arrive about November; but on the Okavango River I have seen them as early as the 1st of September. They do not stay any great length of time in Damara Land, in fact barely long enough to rear their young.

"In December 1863 a pair of these birds took up their abode in my dining-room at Otjimbinque, where they half completed a nest and then abandoned it; another pair (at least I conjectured that they were not the same) after a time continued the labour; but

finally they also abandoned the nest whilst still incomplete; the next season, however, it was finished, probably by the original projectors, and the parent birds safely brought up their young."

It has also been found by Anchieta at Caconda in Benguela, and is said to remain there throughout the year.

The migrations of the present species are certainly difficult to understand; and Mr. J. H. Gurney has given the following note on the specimen obtained by Mr. Ayres at Potchefstroom in March :—

"These were perhaps arriving in Transvaal for the southern winter (see Mr. Ayres's note, Ibis, 1879, p. 291). The specimens which I have received from Transvaal were obtained in May, July, August, and October, which scarcely accords with the experience of the late Mr. Andersson, who, in his Damara-Land notes (p. 52), speaks of having seen them on the Okavango river 'as early as the 1st of September,' and of their arrival in Damara Land 'about November,' and of their nesting in that country in December. This difference of habit as observed in S.E. and S.W. Africa at about the same latitude is, I think, remarkable."

The descriptions are taken from specimens procured by Mr. Surtees in the Cape Colony and now in the British Museum, and the figures are drawn from examples in the Shelley collection.



C.W.W. del.

Vincent Brooks imp.

HIRUNDO NIGRITA

HIRUNDO NIGRITA, *Gray*.

WHITE-GORGETED SWALLOW.

Hirundo nigrita, Gray, Gen. B. i. pl. 40 (1845); id. Cat. Fissir. Brit. Mus. p. 27 (1848); Allen & Thoms. Exped. Niger, ii. p. 498 (1848); Cass. Cat. Hirund. Mus. Philad. Acad. p. 3 (1853); Hartl. J. f. O. 1855, p. 360; Cass. Proc. Philad. Acad. 1859, p. 33; DuChaillu, Equat. Afr. p. 472 (1862); Gray, Hand-l. B. i. p. 71, no. 829 (1869); Sharpe, Cat. Birds in Brit. Mus. x. p. 148 (1885).

Atticora nigrita, Bp. Consp. i. p. 337 (1853); Hartl. Orn. W.-Afr. p. 25 (1857).

Waldenia nigrita, Sharpe, Ibis, 1869, p. 461; id. P. Z. S. 1870, p. 304; id. Cat. Afr. B. p. 45 (1871); Reichen. J. f. O. 1875, p. 21; Sharpe & Bouvier, Bull. Soc. Zool. France, i. p. 38 (1876); Bocage, Orn. Angola, p. 188 (1877); Oust. Nouv. Arch. Mus. (2) ii. p. 96 (1879); De Rochebr. Faune Sénég., Ois. p. 217 (1884); Büttikofer, Notes Leyd. Mus. vii. p. 157 (1885).

Ptyoprogne nigrita, Oust. Bull. Soc. Philom. (7) i. p. 106 (1877).

Atticora fasciata, Forbes, Ibis, 1883, p. 503.

H. ubique indigotico-nigra; plagâ gulari albâ; rectricibus omnibus, mediis exceptis, maculâ magnâ albâ ornatis.

Hab. in Africâ occidentali.

Adult. Above glossy purplish blue, with a concealed patch of silky white on the sides of the lower back; chin dusky; throat white; rest of under surface of body purplish blue, but a little duller than the back; tail-feathers distinctly washed with dark blue above, brownish black below, with the greater part of the inner web white: "bill and feet black; iris dark brown" (*Reichenow*). Total length 4·5 inches, culmen 0·35, wing 4·3, tail 1·6, tarsus 0·35.

Young. Dusky purplish blue, the white throat-spot not quite so large; tail square or only slightly forked, and the white spots on the inner web small and oval.

Mr. Büttikofer states that the white throat-spot is present even in very young specimens, though mixed with a few fulvous feathers; they are also said by the same observer to be greyish brown above. "In two not fully adult specimens, both males, the chest, sides of body, and under tail-coverts are already steel-blue, the abdomen chocolate-brown."

Hab. West Africa, along the rivers from Liberia to the Congo.

On the coast-region of West Africa the most westerly range of the White-gorgeted Swallow appears to be Liberia, where it was met with by Mr. Büttikofer, who writes:—"These fine Swallows are found along the larger rivers I visited in Liberia. They can

always be seen seated upon twigs and trunks of trees rising to some height above the water, whence they hunt after flies and other insects, returning after a short flight to the same spot, where in small cavities their nests can be found."

Specimens are in the British Museum from the Ancobra River, obtained by Capts. Burton and Cameron, from the river Prah, presented by Mr. Godfrey Lagden, and from the neighbourhood of Axim, where they were procured by Mr. Swanzy's collectors. Its distribution on the upper Gold Coast seems to be, therefore, considerable. Dr. de Rochebrune states that it is decidedly rare in the Senegambian region, as it was only found by him at Kita, Bakel, on the banks of the Falémé, Bakoy, and Bafing rivers, at Fontakouro and in the interior of Gangaran, localities said by him to be not far from the river Niger. On the last-named river it was discovered originally by Capt. Allen during the ill-fated Niger Expedition ; the late Mr. W. A. Forbes also saw it about 200 miles up the Niger, and he alludes to the Swallow he met with as "*Atticora fasciata* (?)," meaning, no doubt, that it was a Swallow like *A. fasciata*, which he had not long before seen in Brazil. No specimens were procured by him, but he can have referred only to the present bird. Dr. Reichenow obtained it on the Cameroon and Wuri rivers. Specimens from Gaboon are in the British Museum, and M. DuChaillu procured the species on the Ogowè River; M. Marche likewise met with it on the Upper Ogowè at Lake Silè, in December 1875, and at Lopè in February of the following year. It extends as far south as the Congo, where M. Petit obtained specimens.

The following account of the species in the Cameroons has been published by Dr. Reichenow :—"This Swallow seems to be confined to the rivers, over the waters of which it chases its prey, resting on floating trunks or projecting stumps of trees, on the latter of which it builds its nest. Wherever we found old tree-stumps standing in the river, there we invariably saw this Swallow, and wherever there were none, the Swallow was also absent. The nests exactly resembled in form those of our Chimney-Swallow, and were fixed to the trees a few feet above the water, in such a manner that they are protected above by a knot or the stump of a branch. The interior was lined with some stems of grass, and two or three eggs constituted the sitting; the latter agreed with those of our Chimney-Swallow in the colouring, being spotted with brown and violet on a white ground, and were 0·65 inch long by 0·5 inch broad.

At one time we considered that this Swallow differed generically from the other members of the genus *Hirundo*; but the form of the tail and style of coloration are so variable in the latter genus, that every gradation seems to occur between typical *H. rustica* and the aberrant species, such as *H. nigrita*, *H. smithii*, and others; so that we now prefer to keep all the fork-tailed Swallows under one generic heading.

The descriptions are copied from the ' Catalogue of Birds,' and are taken from specimens in the British Museum. The figure in the Plate is drawn from an example in the collection of Capt. Wardlaw Ramsay.



C.W.W. del

Mintern Brós imp

HIRUNDO ATROCŒRULEA

HIRUNDO ATROCÆRULEA, *Sund.*

BLUE SWALLOW.

Hirundo atrocærulea, Sundev. Œfv. K. Vet. Akad. Förh. Stockh. 1850, p. 107; Gurney, Ibis, 1863, p. 152; Layard, B. S. Afr. p. 55 (1867); Gurney, Ibis, 1868, p. 152; Gray, Hand-l. B. i. p. 70, no. 822 (1869); Sharpe, P. Z. S. 1870, p. 312; id. Cat. Afr. B. p. 46 (1871); id. ed. Layard's B. S. Afr. p. 367, pl. 9. fig. 1 (1883); id. Cat. Birds in Brit. Mus. x. p. 149 (1885).

H. uropygio dorsoque concoloribus cæruleo-nigris; capite dorso concolori; corpore subtùs omnino cæruleo-nigro, dorso concolori.

Hab. in Africâ meridionali-orientali.

Adult. Entirely glossy blue-black, a little more dusky underneath; the shafts of the primaries and tail-feathers white and very plain on the underside; bill black; feet dark brown. Total length 7·2 inches; of bill from front 0·3, from gape 0·5; wing 4·5, tail 4·6, tarsus 0·35, middle toe 0·4, hind toe 0·2.

Hab. The Colony of Natal in South-eastern Africa.

This Swallow is very easily recognized from all the other species of the genus *Hirundo* by its uniform blue-black coloration both above and below. It is an exceedingly rare bird in collections, and we have seen but two specimens, both of which are in the British Museum. One is from the Umvuli River in Natal, where it was collected by the late Professor Wahlberg, who was the original discoverer of the species; and a second specimen was obtained by Mr. Thomas Ayres, also in Natal, and was presented to the Museum by Mr. J. H. Gurney. It is apparently confined to Natal, as up to the present time no example has been procured outside the limits of that colony.

Mr. T. Ayres states that it is the most uncommon species of all the Swallows in Natal, where it frequents the open country, being, apparently, solitary in its habits. They skim with ease and rapidity over the long grassy hills, and he never saw them taking a rest, but flying on and on, apparently without ceasing. He believes them to be found in Natal all the year round, as he has seen them in March, April, August, November, and December.

It will be noticed that the outside tail-feather in this species is very long, and shows an approach to that of the Wire-tailed Swallow (*H. smithii*).

The description is taken from the Umvuli River skin in the British Museum, and the Plate is drawn from the same bird.

GEOGRAPHICAL DISTRIBUTION

←→ Migratory.
←/→ Bird of passage.
←⊖→ Remains locally during the winter.
←△→ Transplanted.
←×→ Winter resident.

△ Acclimatize
◯ Permanent
◯◯ Changing h
~ Visitor.
≈ Accidental

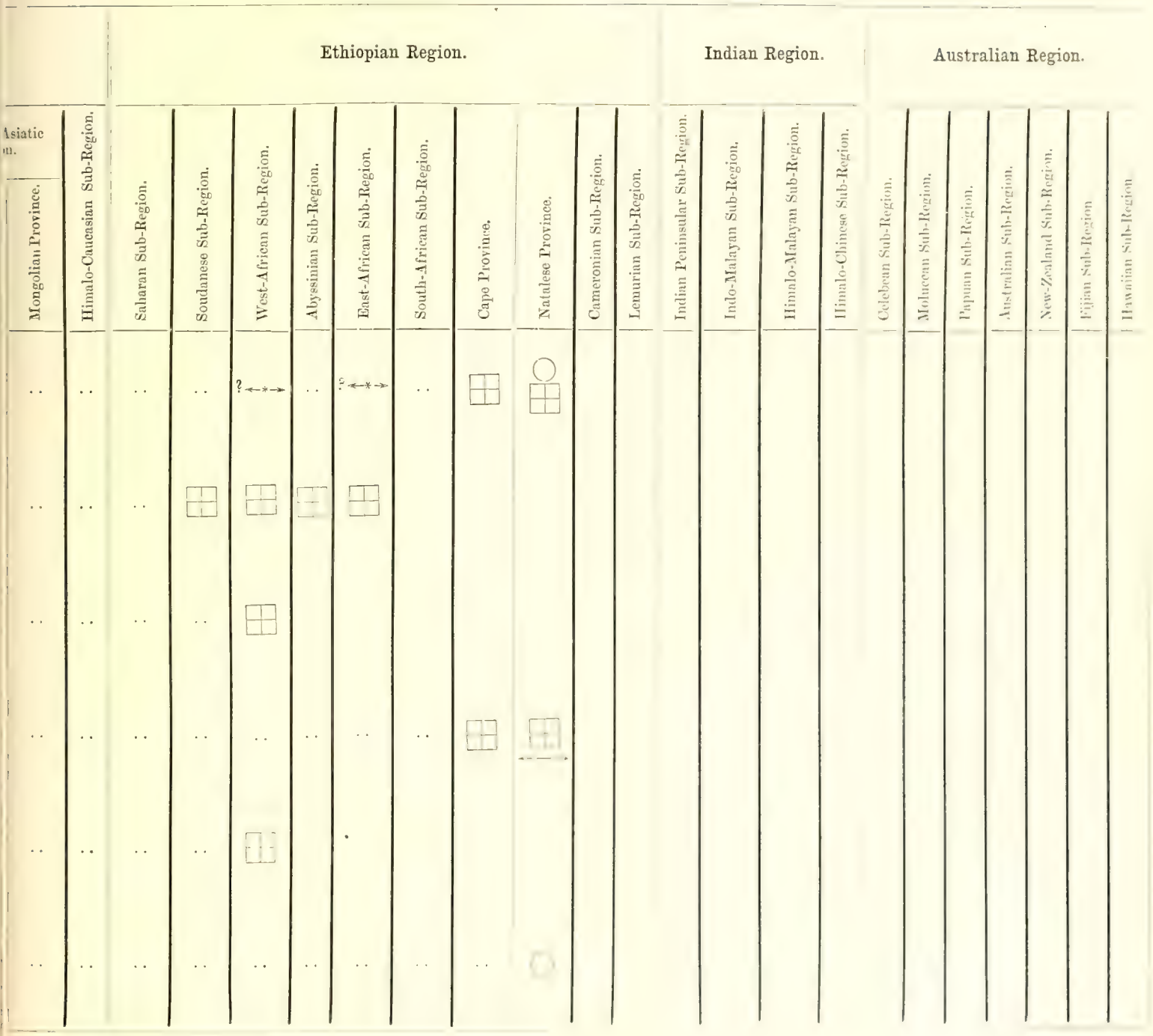
	Nearctic Region.										Neotropical Region.							Palæarcti				
	Arctic Sub-Region.		Cold Temperate Sub-Region.				Warm Temperate Sub-Region.				Antillean Sub-Region.	Central American Sub-Region.		Sub-Andean Sub-Region.	Amazonian Sub-Region.	Brazilian Sub-Region.	Patagonian Sub-Region.	Arctic Sub-Region.	Eurasian Sub-Region.			Mantchurian Sub-Region.
							Humid Province.		Arid Province.													
	Arctic Province.	Alaskan Arctic Province.	Hudsonian Province.	Canadian Province.	Sitkan Province.	Aleutian Province.	Appalachian Sub-Province.	Austro-Riparian Sub-Province.	Campestrian Sub-Province.	Sonoran Sub-Province.		Mexican Province.	Isthmian Province.						European Province.	Central Siberian Province.	East Siberian Province.	
13. *H. albigularis.*	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
14. *H. æthiopica* .	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
15. *H. leucosoma* .	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
16. *H. dimidiata* .	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
17. *H. nigrita* ..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
18. *H. atrocærulea*	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

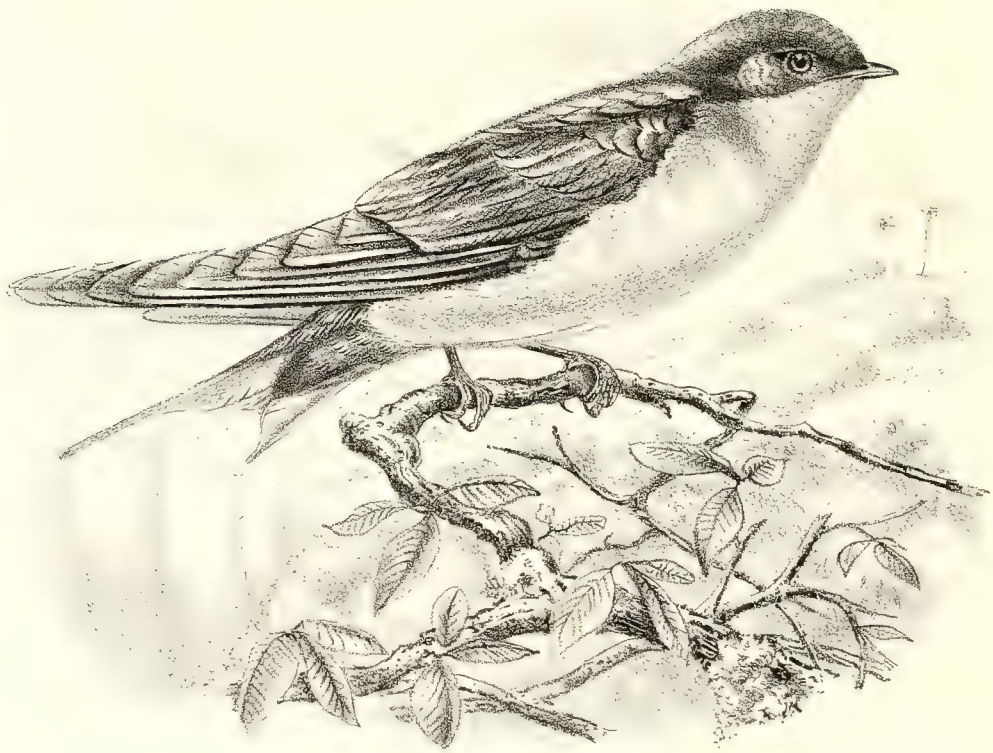
THE GENUS HIRUNDO (*continued*).

V Guest.

† Wanderer.

Rarely
Generally
In colonies
} nesting.





C W W. del.

Mintern Bros. imp.

HIRUNDO NIGRORUFA.

HIRUNDO NIGRORUFA, *Bocage.*

RUFOUS-AND-BLACK SWALLOW.

Hirundo nigrorufa, Bocage, Jorn. Lisb. vi. p. 158 (1877), p. 256 (1878); id. op. cit. vii. p. 236 (1880); id. Orn. Angola, p. 546 (1881); Sharpe, ed. Layard's B. S. Afr. p. 840 (1884); id. Cat. Birds in Brit. Mus. x. p. 150 (1885).

H. uropygio et pileo dorso concoloribus; subtùs castanea, subcaudalibus purpureo-cæruleis.

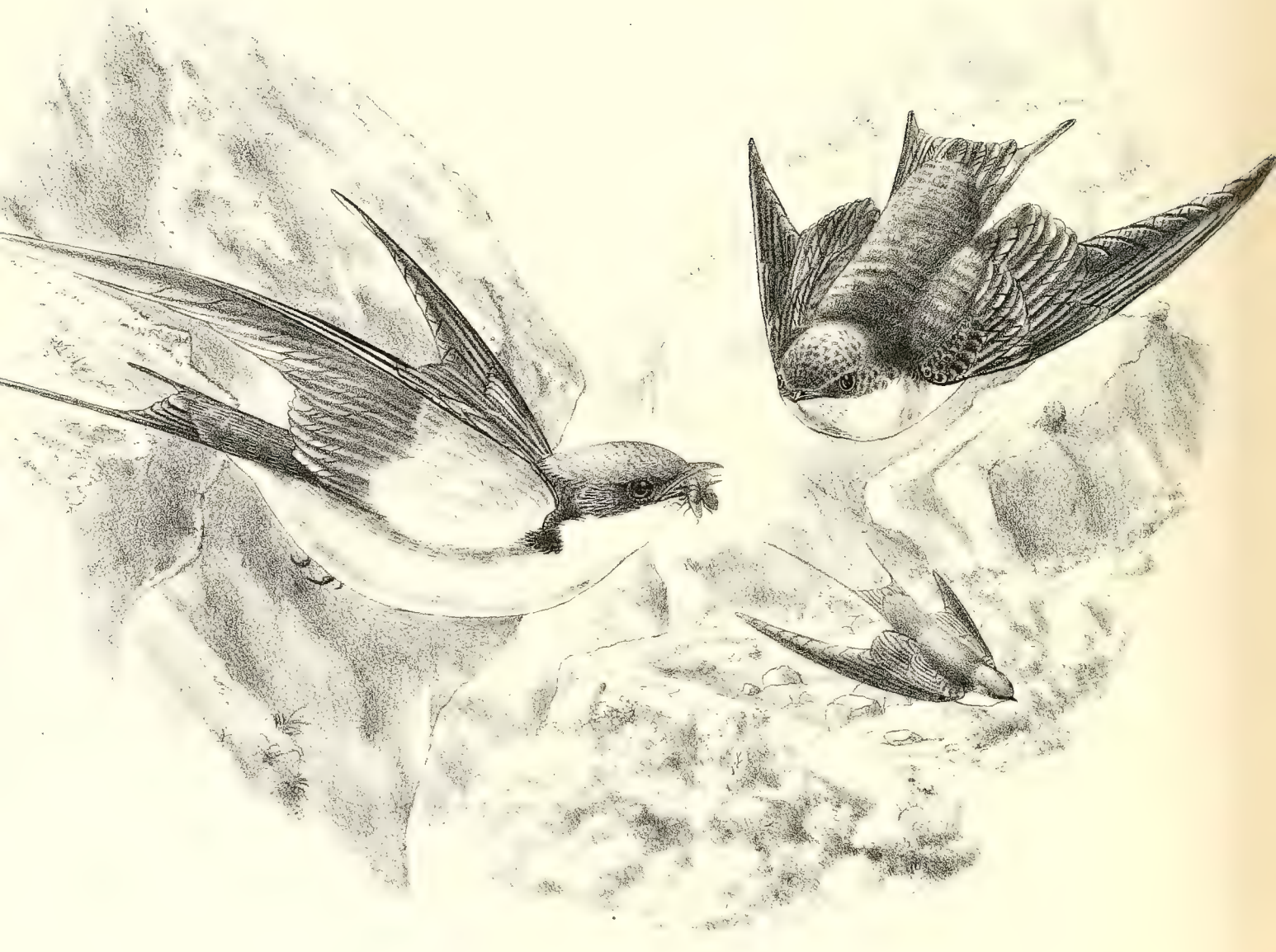
Hab. in provinciâ Angolensi Africæ occidentalis.

Adult male. General colour above glossy purplish blue, with a concealed rufous undershade, only seen when the feathers are disturbed; wing-coverts like the back, with a smoky-brown patch on the inner web of the innermost greater coverts; quills black, glossed with purplish blue externally, the secondaries entirely of the latter colour, resembling the back; tail-feathers black glossed with blue, the three outer feathers with a fringe of white towards the end of the inner web, not pronounced enough to form a spot; head like the back; lores velvety black; ear-coverts like the crown; cheeks and under surface of body chestnut, with a patch of purplish blue on each side of the upper breast; thighs chestnut; under tail-coverts glossy purplish blue; under wing-coverts and axillaries chestnut like the breast; quills sooty black below: "iris chestnut" (*Anchieta*). Total length 5·3 inches, culmen 0·3, wing 4·35, tail 2·6, tarsus 0·4.

Hab. Benguela.

This pretty Swallow is apparently confined to the district of Benguela, in the southern part of the Portuguese province of Angola; at least it is so far only known from that locality. At present Senhor Anchieta has met with but three specimens, all from the neighbourhood of Caconda. The Lisbon Museum, through Professor Barboza du Bocage, was good enough to present one of these specimens to the British Museum, and from it the above description has been taken. Nothing has as yet been recorded of the habits or mode of nidification of the species.

The figure in the Plate has been drawn from the above-mentioned example in the British Museum.



C.W.W del.

Mintern Bros . imp.

HIRUNDO SMITHII.

♀ et jn.



C. W. W. del

HIRUNDO SMITHII.

Mintern Bro's. imp.

HIRUNDO SMITHII, *Leach.*

WIRE-TAILED SWALLOW.

Hirundo smithii, Leach, App. to Tuckey's Voy. Congo, p. 407 (1818); Hartl. Orn. West-Afr. p. 26 (1857); id. J. f. O. 1861, p. 103; Sharpe, Cat. Birds in Brit. Mus. x. p. 150 (1885).

Wire-tailed Swallow, Lath. Gen. Hist. vii. p. 309, pl. cxiii. (1823).

Hirundo filifera, Steph. Gen. Zool. xiii. p. 78 (1826); Gray, Gen. B. i. p. 58 (1845); id. Cat. Fissir. Brit. Mus. p. 25 (1848); Blyth, Cat. B. Mus. As. Soc. p. 197 (1849); Bp. Consp. i. p. 338 (1850); Cab. Mus. Hein. Th. i. p. 46 (1850); Horsf. & Moore, Cat. B. E.I. Co. Mus. i. p. 93 (1854); Jerd. B. Ind. i. p. 159 (1862); Kirk, Ibis, 1864, p. 320; Blyth, Ibis, 1866, p. 337; Tytler, Ibis, 1868, p. 196; Pelz. t. c. p. 307; id. J. f. O. 1868, p. 25; Beavan, Ibis, 1869, p. 403; Heugl. Orn. N.O.-Afr. i. p. 155 (1869); Gray, Hand-l. B. i. p. 70, no. 820 (1869); Sharpe, P. Z. S. 1870, p. 312; Finsch & Hartl. Vög. Ostafr. p. 141 (1870); Jerd. Ibis, 1871, p. 352; Blanf. J. A. S. Beng. xl. p. 271 (1871); Hume, Str. F. 1873, p. 164; Adam, t. c. p. 370; Vipan, t. c. p. 495; Hume, Str. F. 1874, p. 469; Aitken, Str. F. 1875, p. 212; Butler, t. c. p. 451; Hume, t. c. p. 451; Fairb. Str. F. 1876, p. 254; Wardlaw Ramsay, Ibis, 1877, p. 466; Anders. Rep. Exped. Yun-nan, Birds, p. 650 (1878); Hume & Davis. Str. F. 1878, p. 43; Davids. & Wend. Str. F. 1878, vol. ii. p. 76; Butler, t. c. p. 181; Ball, t. c. p. 202; Hume, Str. F. 1879, p. 84; Bingham, t. c. p. 192; Doig, t. c. p. 370; Butler, Cat. B. Sind &c. p. 12 (1879); id. Cat. B. S. Bomb. Pres. p. 14 (1880); Vidal, Str. F. 1880, p. 43; Wardlaw Ramsay, Ibis, 1880, p. 48; Bingham, Str. F. 1880, p. 148; Reid, Str. F. 1881, p. 18; Bocage, Orn. Angola, p. 186 (1881); Davidson, Str. F. 1882, p. 292; C. Swinh. Ibis, 1882, p. 101; Sharpe, ed. Layard's B. S. Afr. p. 368 (1882); Salvad. Ann. Mus. Civic. Genov. (2) i. p. 120 (1884); Murray, Vertebr. Faun. Sind, p. 102 (1884); De Rochebr. Faun. Sénég., Ois. p. 218 (1884); C. Swinhoe & Barnes, Ibis, 1885, p. 59.

Hirundo filicaudata, Frankl. P. Z. S. 1831, p. 115.

Hirundo ruficeps, Licht. Verz. Doubl. p. 68 (1823); Ferr. et Gal. Voy. Abyss. iii. p. 242 (1847); Cass. Cat. Hirund. Mus. Philad. Acad. p. 3 (1853); Brooks, Ibis, 1869, p. 46; Blanf. Geol. & Zool. Abyss. p. 348 (1870); Hayes Lloyd, Ibis, 1873, p. 406.

Cecropis filifera, Less. Compl. Buff. viii. p. 499 (1837).

Cecropis ruficeps, Boie, Isis, 1844, p. 171.

Cecropis smithii, Boie, Isis, 1844, p. 174.

Cecropis filicaudata, Rüpp. Syst. Uebers. p. 22 (1845); Heugl. Syst. Uebers. p. 14 (1856); Antin. Cat. Ucc. p. 26 (1865).
Hirundo filicauda, Müll. J. f. O. 1855, p. 5.
Cecropis filicauda, Brehm, J. f. O. 1855, p. 452.
Uromitrus filifera, Bp. Rivist. Contemp., Torino, 1857, p. 4; Brehm, Reis. Habesch, p. 209 (1863); Hume, Nests and Eggs Ind. B. p. 75 (1874); Ball, Str. F. 1874, p. 383, 1875, p. 289.
Hirundo velocissima, Pr. Würt. MSS., teste Heuglin.
Hirundo fuscicapilla, Heugl. Orn. N.O.-Afr. i. p. 154 (1869).
Hirundo anchietæ, Bocage, Jorn. Lisb. 1867, p. 150.
Uromitrus filiferus, Oates, B. Brit. Burm. i. p. 307 (1883).

H. dorso postico et uropygio dorso concoloribus, chalybeo-cæruleis; pileo rufo.

Hab. in regione Æthiopicâ et in regione Indicâ.

Adult male. General colour above glossy purplish blue, the feathers of the mantle and hind neck varied with white bases to the feathers; wing-coverts like the back, with a white spot on the inner web of the innermost greater coverts; bastard-wing, primary-coverts, and quills black, edged with purplish blue; tail-feathers black, edged with purplish blue, all but the two centre feathers with a large white spot near the end of the inner web; crown of head deep bay; lores and feathers round the eye black; ear-coverts purplish blue; cheeks and under surface of body white, with a slight fulvous tinge on the chin; the sides of the upper breast purplish blue, forming a lateral patch; under wing-coverts and axillaries like the breast; quills blackish below: "legs, feet, and bill black; iris blackish brown" (*E. A. Butler*). Total length 6·7 inches, culmen 0·3, wing 4·5, tail 1·4, outer tail-feather 3·75, tarsus 0·4.

Adult female. Similar to the male in colour, but with a much shorter outer tail-feather. Total length 5 inches, culmen 3·0, wing 4·2, tail 1·25, outer tail-feather 1·9, tarsus 0·4.

The descriptions are taken from a pair of birds from the Congo, as from this locality came the original specimen. Indian examples are rather larger, and exceed the African ones in the length of the outer wire-like tail-feather. The males from various parts of India, in the Hume collection, have the wing from 4·4 to 4·9 inches in length, and the outer tail-feather from 5·0 to 7·0 inches. On the other hand, however, the same collection contains male examples with the tail-feather only 4·5 inches long, so that the difference between these and African examples is not very great.

Sometimes the head is very pale tawny, while in other specimens it is deep chestnut. The paler birds are generally in worn breeding-plumage, but not always, and it is probable that the colour of the crown deepens and the tail lengthens with age.

Young. Much more dingy blue than in the adults and not nearly so glossy; the head brown; the throat and fore neck rufous buff; the tail nearly square, without any marked prolongation of the outer feather, the white spot on the inner web of the feathers varying in size, but not so large as in the adults.

Young birds after their first moult have much shorter tails than the adult, are rather greener in colour, and have the throat and chest washed with rufous. The head is dark chestnut, and bears out the remarks made above on this subject.

Hab. Ethiopian Region generally; and in Asia from Baluchistan, throughout the greater part of the Indian peninsula to Burmah and Tenasserim.

This very elegant Swallow is found in Africa and India, being much more plentiful and more widely distributed in the Indian than it is in the Ethiopian Region. Its rufous cap, blue back, white underparts, and wire-like tail-feathers form a combination of characters which render the species easily recognizable.

In Africa it would appear to be decidedly local, for there are vast tracts of the continent in which it is apparently absent. Mr. Gould mentions having seen a specimen from the River Gambia, and it has been recorded by Dr. Hartlaub as having been obtained by Aubry Lecomte on the River Casamance. Dr. de Rochebrune states that it is common enough in Senegambia, and that he found it at Albreda, Zekinkior, Sainte-Marie, Sedhiou, and Mélacorée.

We have no record of its further occurrence in West Africa till we arrive at the Congo region. Here it was originally discovered on Chisalla Island during Captain Tuckey's expedition, and M. Louis Petit also procured specimens at Landana. Senhor Anchieta has met with it at Benguela, Gambos, and Capangombe in the southern portion of the Portuguese province of Angola. Sir John Kirk found it at Tete on the Zambesi, and the late Professor Peters procured it in Mozambique.

Von Heuglin gives the following account of its distribution in North-eastern Africa :—"Resident in Dongola, according to Brehm, and is recorded by Hartmann as the House-Swallow of the Upper Nile." It was found by Von Heuglin himself in Dongola, near Berber, in Kordofan, on the Bahr el Azraq, and in Abyssinia between 2500 and 6000 feet above the sea-level. Brehm mentions its occurrence on the Abyssinian coast-land, and it is probably also met with in Arabia. During the expedition to Abyssinia, Mr. Blanford only saw this Swallow once, when he shot a pair sitting together on a spray overhanging a small stream near Agula, about halfway between Adigrat and Antalo. The late Marquis Antinori met with the species on the Blue Nile, and received a specimen from Khartoum. He likewise obtained it at Daimbi in Shoa, in March 1882.

Von Heuglin described a new Swallow as *Hirundo fuscicapilla*, which he found "in large flocks in Central and Western Abyssinia, in thick forest, generally resting on trees." This supposed new species is evidently the young of *H. smithii*, though it is remarkable that the traveller met with nothing but brown-headed birds.

In the Indian region the Wire-tailed Swallow has a wide range, which we will endeavour to trace, the distribution being very fully accounted for by the specimens in the Hume collection. It extends to the westward into Afghanistan, Sir Oliver St. John having forwarded to Mr. Hume a specimen from the Kandahar district; and Captain Wardlaw Ramsay records its occurrence in the Kurrum valley, and states that it is probably found in the Hariab district. Mr. Murray notes it from Quetta. Mr. Hume did not himself procure the species in Sind, but he has received a specimen from

Hyderabad during the inundation, and Captain Malden informed him that it was common about Jacobabad in May. Mr. Murray gives the following note on its occurrence :— "In Sind it arrives about the latter end of July and breeds in the province. All the nests taken by myself and Lieut. Henry Barnes were in July and August, and a few in September. It builds a shallow cup or saucer-shaped nest of clay, lined with feathers, generally under bridges and culverts, and, on the Indus, under the stern of the flat-bottomed barges lying unused. Eggs 2–4, white, speckled all over with rusty or brick-red." Mr. Scrope Doig has found it breeding in the Eastern Narra. In Kathiawar it is common, according to Major Hayes Lloyd.

Near the Sambhur Lake it is said by Mr. Adam not to be common, though a few birds are always to be seen in the mornings, working over the fields. He obtained a nest with two eggs on the 13th of July. Mr. Hume has specimens procured by himself at Ajmere, in November and December.

Colonel Butler, in his "Notes on the Avifauna of Mount Aboo and Northern Guzerat," says that it seems to be partial to particular localities. In some places, though not very plentiful anywhere, it may be seen in pretty considerable numbers, in others it does not occur at all. He never saw one at Mount Aboo. Mr. Hume comments on the above paragraph :—"Common throughout the whole region, but I also never saw it at Aboo; and Dr. King, who collected there for two years, neither preserved a specimen, nor recorded it in his MSS. list. This is the more remarkable, as it ascends the Himalayas to an elevation of at least 5000 feet."

On Mr. Sharpe's journey to Simla he noticed a pair in May, flying under a bridge near one of the hill-stations beyond Solun, and he saw them there again on his return in July. Dr. Stoliczka procured specimens at Kangra, in the North-west Himalayas, at a height of 2000 feet, and in the Hume collection is a male from Koteghur. Mr. W. E. Brooks met with it in May at Dhurmsala, in Cashmere.

Colonel Tytler, during his march from Simla to Masuri, states that it was not uncommon in valleys near streams, but at no great elevation; and near Naini Tal and Almora, Mr. W. E. Brooks records it as tolerably common along the rocky streams in the valleys, where it breeds. Colonel Strachey also met with it in Kumaon, and a specimen from the Dehra Doon is in the Hume collection. Mr. Hodgson also obtained it in Nepal.

The late Captain Beavan writes :—"I have frequently heard from my late friend Dr. Scott, that this species occurs in some abundance about Umballa in certain seasons, and breeds there under culverts and road-bridges near that station, but I never observed it there myself." The Hume collection, however, contains an example from the above neighbourhood, collected by Dr. Scott.

Captain Bingham has met with the Wire-tailed Swallow near Delhi in September; and in the Hume collection are examples from Lucknow, Cawnpore, Allahabad, Etawah, and Mynpuri. Mr. George Reid remarks that the Wire-tailed Swallow is a permanent resident, and, though never found in any great numbers, is universally spread over the

Lucknow division. It habitually frequents jhils and rivers, the masonry bridges over the latter being favourite resorts; but it may be met with in any locality on its way to and from its especial haunts.

Professor Valentine Ball says that it is not unfrequently met with in Chota Nagpur, especially in the vicinity of some of the larger rivers, and in his notes on the birds found between the Ganges and the Godaveri River he enumerates the following list of localities for the species:—Rajmehal Hills, Lohardugga, Singhbum, Sirguja, Sambalpur, north of Mahanadi, Orissa, south of Mahanadi. Mr. Hume has received it from Raipur and Saugor, and Mr. W. T. Blanford met with it in the Wardha valley.

Colonel Swinhoe and Lieut. Barnes state that near Mhow it is very common and a permanent resident, breeding during March, April, and May. Captain Beavan observed it near Morar in Gwalior, in the cold weather. Mr. Wyatt shot a female on the Nirbada near Jabalpur. Colonel Butler obtained a young specimen in the valley of the Tapti, in Western Khandeish, in May; and in Western Khandeish, according to Mr. J. Davidson, it is a permanent resident, common throughout the district, breeding along all the rivers and nullahs over water from February to May. In the Deccan Messrs. Davidson and Wenden state that it is common and breeds there. Colonel Butler, in his list of the birds of the Southern Bombay Presidency, gives the species as a permanent resident, common and occurring in most localities throughout the region. Specimens collected by him at Belgaum are in the Hume collection. Mr. Vidal states that it is nowhere common in the south Konkan, and gives as localities where he has observed it—Ratnagiri, Pévé, Khed-Malvan, and Dhamapur in the south, and Bankok in the north.

Mr. W. Davison has obtained the species at Muddur, in Mysore, and specimens from Coonoor, in the Nilghiri Hills, are in the Hume collection.

Captain Vipan, in the first volume of 'Stray Feathers,' refers to a letter addressed to the 'Field' by an anonymous writer, in which the Wire-tailed Swallow is said not to occur west of Coimbatore; but he states that he saw several in February about five miles from Cannanore, and about 200 yards from the coast.

In Burmah Captain Wardlaw Ramsay procured the present species at Tonghoo, and Dr. Anderson met with it at Bhamo in January. A specimen from the neighbourhood of Rangoon is said by Mr. Oates to be in the Phayre Museum in that town. According to Messrs. Hume and Davison it only occurs in the north of Tenasserim; and the latter traveller says that he found the species flying over the paddy-fields in small numbers at Pahpoon, but did not notice it anywhere else in the province. Capt. Bingham, writing from Tenasserim, says:—"I identified, but failed to secure, specimens of this beautiful Swallow at Kamangla rapids on the Thoungyeen River. In July 1879, I found them common about the paddy-fields near Kamaulai on the Salween, and secured a few specimens. I only noticed them for a day or two, and then they passed on westward."

Von Heuglin gives the following note on the habits of the Wire-tailed Swallow in North-eastern Africa:—"I observed these charming little creatures from the end of the rainy season until February or March, but I cannot say with certainty if they migrate

later on. They live in pairs or families, but never in large communities, preferring rocky valleys where trees grow, as they like to sit on the bare boughs and tops of trees. The song resembles that of the Chimney-Swallow both when at rest and in flight, but it is louder and more varied. It is never seen in villages. The breeding-time in Abyssinia appears to be between the months of September and January, and I found nests in November on the rocky cliffs of Asaru (near Adoa). The latter consist of dung and straw, similar to those of the Common Swallow, and they are placed under overhanging rocks at a height of from ten to twenty feet. A nest found towards the end of November contained four half-fledged young birds, and as the males continue an animated song until January, I conclude that the species has several broods."

The following excellent account is given by Mr. Hume in his 'Nests and Eggs of Indian Birds':—"In the plains of India the Wire-tailed Swallow breeds chiefly in February and March, and again in July, August, and September; but I *have* seen eggs as early as January and as late as November. In the lower ranges of the Himalayas, where it breeds up to an elevation of from 4000 to 5000 feet, I have taken the nests both in April and May, and have had eggs sent me in June.

"They breed almost exclusively in the immediate neighbourhood of water; under the cornices of bridges; under culverts beneath which some little pool remains; under overhanging shelves of rock or kunker, projecting from the faces of stony or earthy river cliffs; and in cells of buildings overlooking the water.

"The nest is composed exteriorly of mud, and is usually lined with feathers; in shape, for the most part, about two-thirds of a deepish cup. I have a note of two nests which I took at Etawah, at a canal bridge, March 8th, 1867; one contained three, the other two eggs. Those of the one nest were ready to hatch off; those of the other were quite fresh. The shell of the nest was made of pellets of clay. In shape the first was half of a wide cone, blocked up against the voussoir faces, just below an overhanging cornice. Internally it was carefully lined with a few fine roots of grass and many soft feathers, chiefly those of doves and parrots, so as to leave a neat hemispherical cavity for the eggs. The second was a deep cup, plastered against the face of the bridge, a little way below a square projection, and had absolutely no lining of feathers, only a few grass roots.

"A beautiful nest taken by Mr. Adam in the Etmadoodowla Gardens at Agra in the third week in August, was a broad, shallow, half saucer of pellets of clay, about $5\frac{1}{2}$ inches broad, and about 3 inches from front to back, plastered against one of the walls of the small cells facing the river and near the roof. Several other birds of the same species were breeding in the same cell. The bottom of the nest was about $\frac{3}{4}$ inch and the sides about $\frac{1}{2}$ inch thick. The cavity was lined with fine grass roots and a very few feathers. It contained three fresh eggs.

"Mr. Adam remarks: 'On the 15th July, at Sambhur, I observed this species building in an old rest-house.

"'The nest was half finished, and was placed in a very exposed place, under the

cornice, about 10 feet from the ground. Both birds were bringing mud from an open well about 200 yards off, but the male seemed very inactive, and appeared to be shy of approaching the nest while I stood about 8 yards off with my binoculars watching the building operations.

"'The mud was taken from the water's edge, each bird taking from eight to ten pecks at the mud to fill its bill, and sometimes with the mud a piece of fine grass was taken. When the birds reached the nest, the mud was discharged along the edge by shaking the head and body, much like the shaking which takes place when a pigeon is feeding its young. The grass or fibre was carefully worked along the edge of the nest, and great care seemed to be taken by both birds to make the portion attached to the wall very secure.

"'On the 18th July I once took a nest with four eggs from an old well. The eggs are pinkish white with rust-coloured spots and blotches. On several occasions during August, I have found the nest of this bird about old buildings along the Jumna near Agra. The nests generally contained three eggs.'

"Three, I think, is the usual number of eggs, but I have found only two, hard-set; and Mr. W. Blewitt, who took several nests during July and August, all built under canal and drain bridges in the neighbourhood of Hansie, found four eggs in two of the nests.

"Where there is plenty of water, from three to seven nests will often be found quite near to each other; while where there is little water, they are usually quite solitary.

"Dr. Jerdon remarks that 'it breeds in old buildings, on walls, in stone bowries or wells, and very commonly under bridges, and in rocks overhanging water, making a small nest, open at the top, and laying two or three eggs, which are white, sparingly spotted with rusty red. I always found the nest single, and we seldom see more than five or six couples in one place.'

"The eggs are in shape a long narrow oval, a good deal pointed towards one end. In some there is a pyriform tendency, and some are so excessively long and narrow as to recall the eggs of *Cypselus affinis*. In texture they are fine and delicate, with, when fresh, a beautiful gloss, which, however, almost disappears as incubation proceeds. The ground-colour is white, or pinkish white (when fresh and unblown, almost a delicate salmon-pink, owing to the yolk partially showing through), richly speckled, spotted, and blotched with various shades of reddish brown and brownish red. The extent of the markings varies greatly, as well as the intensity of their colouring. Some are spotted pretty uniformly all over; but in the majority the markings are most numerous at the large end. Occasionally, they are gathered into a well-marked zone towards this end; and one egg has a nearly complete cap of confluent markings, covering the whole of the larger end. These are the most richly marked Swallow's eggs that I know, and some specimens are excessively handsome.

"The eggs vary greatly in dimensions, viz., from 0·65 to 0·8 inch in length, and from

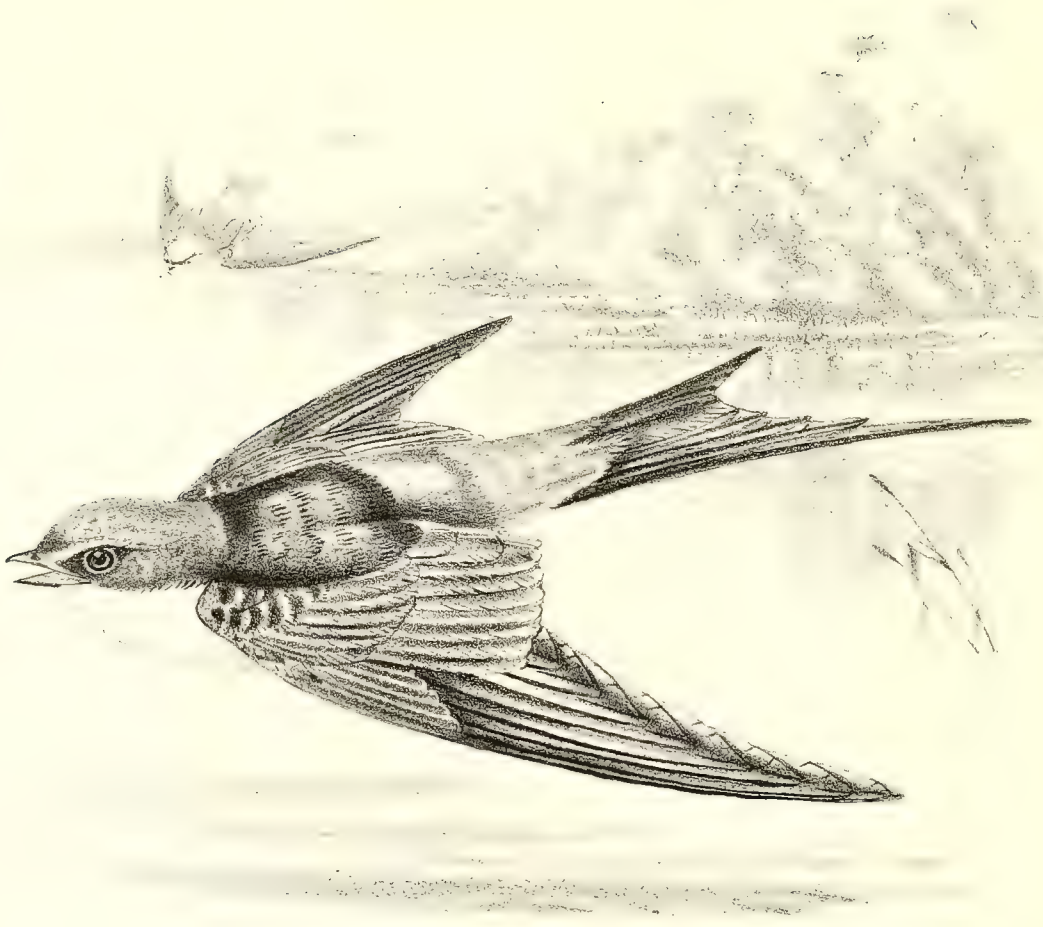
0·5 to 0·57 inch; but the average struck from a large number of measurements I find to be 0·72 by 0·53 inch."

In his Notes on the Swallows and Swifts of Berar, Mr. Aitken observes:—"This species supplies in Berar the place of *H. rustica* which it so strongly resembles in its habits. It seems to be even fonder of water; indeed it rarely leaves it, skimming over the surface with a speed matching that of the Swift, its metallic colours flashing in the sun. It is a permanent resident, and breeds from February to June. The nest is a mere shallow saucer built under a rock or wall, sometimes even on earthy bank at the water-side, and it exhibits in the construction all the forethought and patience of its English relative. The first nest I watched took four weeks to complete, a narrow layer of mud being added cautiously each day, and left to dry. When this part of the business was complete, a lining of fine grass was added, then one of feathers, and on this were laid three long-shaped eggs, of a white colour, well spotted with dark reddish brown. I confess to having been guilty of the cruelty of taking two of these for my collection, but the faithful little bird continued still to sit, and I had afterwards the satisfaction of seeing the remaining egg hatched and the young one fledged. Long after they are able to fly, the young are fed in the air by the old birds exactly after the manner of the English Swallow, parents and young circling round and round and then with a complacent twitter, clinging together for an instant, during which the mouthful of insects is transferred from the one to the other."

With respect to the migrations of this species, a letter is quoted by Professor Ball, which had been addressed to him by Mr. Lewin, concerning the species in Chota Nagpur:—"I was strolling along the banks, or rather sands, of the Koel, a few days before Christmas, when I noticed a long flight of *H. filifera* (I shot one to make sure). They were proceeding in small parties of 8 to 10 or 15 steadily to westward, and I am sure at least 200 must have passed during the short time I looked on. They are by no means common here, and I never saw more than six or eight at a time before. I got a nest last April in a cleft in a rock on the Koel near here."

Dr. Jerdon says that the Hindustani name of "Leishra" is given to this species, from a supposed resemblance of the thin tail-feathers to the rod used for catching birds with bird-lime, which is called "Leishra."

The adult male figured is in Mr. Wyatt's collection, and is from Malabar, and the female and young are drawn from specimens in the Hume collection.



HIRUNDO GRISEOPYGA.

HIRUNDO GRISEOPYGA, *Sundev.*

BROWN-HEADED SWALLOW.

Hirundo griseopyga, Sundev. Œfv. K. Vet.-Akad. Förh. Stock. 1850, p. 107; Layard, B. S. Afr. p. 55 (1867); Gray, Hand-l. B. i. p. 71, no. 833 (1869); Sharpe, P. Z. S. 1870, p. 313; Bocage, Orn. Angola, p. 546 (1881); Shelley, Ibis, 1882, p. 260; Sharpe, ed. Layard's B. S. Afr. pp. 368, 841 (1882–84); id. Cat. Birds in Brit. Mus. x. p. 152 (1885).

Atticora melbina, J. Verr. Rev. et Mag. de Zool. 1851, p. 310; Strickl. Contr. Orn. 1851, p. 163; Cass. Cat. Hirund. Mus. Philad. Acad. p. 6 (1853); Hartl. J. f. O. 1853, p. 398; id. Orn. W.-Afr. p. 25 (1857); Cass. Proc. Philad. Acad. 1859, p. 33; Hartl. J. f. O. 1861, p. 103; Forbes, Ibis, 1883, p. 514.

Hirundo melbina, Strickl. Contr. Orn. 1851, p. 131; Gray, Hand-l. B. i. p. 70, no. 824 (1869).

Atticora cypseloides, Heugl. J. f. O. 1862, p. 297, 1864, p. 276.

Atticora griseopyga, Heugl. Orn. N.O.-Afr. i. p. 149, tab. vii. (1869); Sharpe, Ibis, 1870, p. 428.

Hirundo cypseloides, Gray, Hand-l. B. i. p. 70, no. 826 (1869); Boucard, Cat. Av. p. 334 (1875).

Psalidoprocne melbina, Bouvier, Cat. Ois. &c. Marche, p. 9 (1875).

Hirundo poucheti, Petit, Bull. Soc. Zool. France, viii. p. xliii (1883).

H. pileo et uropygio brunneis facile distinguenda.

Hab. in Africâ occidentali, meridionali-orientali et septentrionali-orientali.

Adult. General colour above glossy blue-black, the mantle varied with white bases to the feathers; lower back, rump, and upper tail-coverts brown, contrasting with the back; wing-coverts glossy blue-black like the back; quills black, externally glossy blue-black; tail-feathers blue-black towards their ends, but more or less washed with brown towards the base; entire head and nape brown, with a slight bluish gloss; lores dusky blackish, surmounted by a line of hoary feathers; sides of face and ear-coverts brown; cheeks and under surface of body satiny white, with a slight fulvous tinge on the throat; the flanks, thighs, and lateral under tail-coverts slightly washed with brown; under wing-coverts brown, edged with white; quills dusky below, brownish along the inner web: "bill blackish; feet dusky ashy; iris dusky" (*Von Heuglin*). Total length 5·7 inches, culmen 0·3, wing 3·8, tail 1·65, outer feather 3·1, tarsus 0·5.

Young. Differs from the adult in having narrow edgings of pale reddish brown to the feathers of the back and wing-coverts, and in having the throat and fore neck reddish buff.

Hab. Natal and Swazi Land in S.E. Africa up to Mashoona Land; West Africa, from Benguela to the Niger; N.E. Africa, the Gazelle river district and Abyssinia.

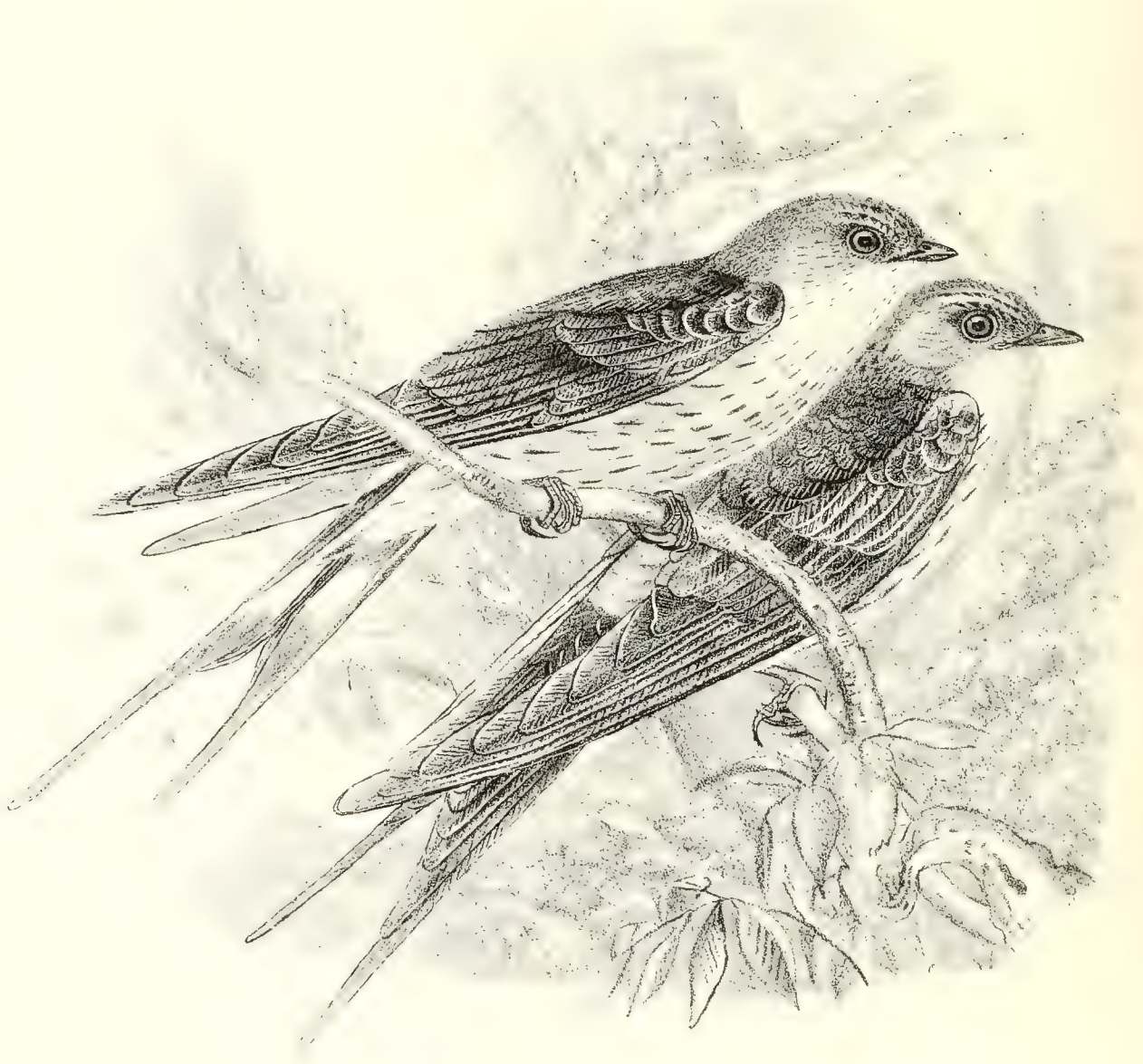
This Swallow bears a great resemblance to the young of the Wire-tailed Swallow (*Hirundo smithii*), which also has a brown head; but the latter has the whole of the lower back and rump blue like the mantle, and the under wing-coverts white, whereas in *H. griseopyga* the rump is brown and the under wing-coverts brownish, even in the young stage. The young of *H. smithii* also shows a slight indication of the white spot on the tail-feathers, of which there is no trace in *H. griseopyga* at any age.

The present species was discovered in Natal by the late Professor Wahlberg; but we have never seen a specimen from this Colony, though Mr. T. E. Buckley procured one in Swazi Land. During Mr. Jameson's expedition to Mashoona Land, Mr. T. Ayres says that he observed these Swallows on the Quae-Quae River in October, hunting the trees for their insect food, but they were not plentiful. Senhor Anchieta has met with the species at Caconda in Benguela.

In West Africa it occurs from the Congo to the Niger, having been met with by M. Petit at Mayumba, on the first-named river, in April. He bestowed on it the new name of *H. poucheti*; but as he kindly sent a specimen for us to examine, we were able to determine its identity with the present species. The late M. Jules Verreaux described specimens from Gaboon as *Atticora melbina*, and DuChaillu obtained it at Cape Lopez and on the Camma River.

The late Mr. W. A. Forbes mentions his having obtained a Swallow at Egga, which he believed to be of this species, but no specimens were in his Niger collection. Mr. Frank Nicholson, however, has recently presented a nestling to the British Museum, which had been obtained by a friend of his high up the river Niger, and which we identify as the young of this species. In North-eastern Africa, the late Baron von Heuglin states that he twice met with the species in two very different localities, viz. in Jan. 1862 on meadows and pasture-lands at Gondar, and in the same month in 1864 on the streams which extend from Wau to the lake-region of the Gazelle River, in the steppes. In Abyssinia it was mingled with flocks of *Cotile paludicola* and *Cecropis senegalensis*, in Central Africa only with the last-named species. The flight is swift and generally vigorous, and at no great height. Their note he does not remember to have heard.

The specimen described, and figured in the accompanying Plate, is in the British Museum, from Gaboon.



C. W. W. del.

Mintern Bro's imp.

HIRUNDO CUCULLATA.

HIRUNDO CUCULLATA, *Bodd.*

LARGE RUFOUS-HEADED SWALLOW.

Hirondelle à tête rousse du Cap de Bonne Espérance, Daubent. Pl. Enl. 723. fig. 2.

Hirundo cucullata, Bodd. Tabl. Pl. Enl. p. 45 (1783, ex Daubent.); Gray, Gen. B. i. p. 58 (1845); id. Cat. Fissir. Brit. Mus. p. 23 (1848); Jard. Edinb. New Philos. Journ. n. ser. iii. p. 241 (1856); Gray, Hand-l. B. i. p. 69, no. 795 (1869); Heugl. Orn. N.O.-Afr. i. p. 162 (1869); Sharpe, P. Z. S. 1870, p. 318; id. Cat. Afr. B. p. 46 (1871); Gurney, in Anderss. B. Dam. Ld. p. 50 (1872); Ayres, Ibis, 1873, p. 281; Shelley, Ibis, 1875, p. 67; Ayres, Ibis, 1876, p. 424; Bocage, Orn. Angola, p. 183 (1881); Sharpe, in Oates's Matabele Land, App. p. 311 (1881); Shelley, Ibis, 1882, p. 260; Salvin, Cat. Strickl. Coll. p. 149 (1882); Butler, Feilden, & Reid, Zool. 1882, p. 251; Holub & Von Pelz. Beitr. Orn. Südafr. p. 58 (1882); Sharpe, ed. Layard's B. S. Afr. pp. 370, 841 (1882); id. Cat. Birds in Brit. Mus. x. p. 152 (1885).

Hirundo capensis, Gm. Syst. Nat. i. p. 1019 (1788, ex Daubent.); Bp. Consp. i. p. 339 (1850); Grill, Zool. Anteckn. p. 34 (1858); Layard, B. S. Afr. p. 54 (1867); Bocage, Jorn. Lisb. 1868, p. 47.

Cecropis capensis, Boie, Isis, 1826, p. 971, 1844, p. 174; Cab. Mus. Hein. Th. i. p. 47 (1850).

Hirundo rufula ?, Blyth, Cat. B. Mus. As. Soc. p. 198 (1849).

Cecropis cucullata, Cass. Cat. Hirund. Mus. Philad. Acad. p. 3 (1853).

Lillia capensis, Boie, Isis, 1858, p. 364.

H. uropygio rufo; pileo rufo; alâ 5·1; subtùs nigro angustè striolata.

Hab. in Africâ meridionali.

Adult. Head intense sienna, the base of the feathers blue-black, showing occasionally a few markings of this colour on the crown; upper part of the back and scapulars glossy purplish blue, marked with white in the extreme upper part of the neck, this appearance being caused by the whitish edging to the feathers when they are disarranged; wing-coverts like the back, the edge of the wing marked with white, especially on the primary-coverts, all of which are edged with white; quills brownish black, lighter on the inner web, washed externally with dark greenish steel-blue; lower part of the back pale sienna, much paler on the upper tail-coverts, where it is nearly white, the outermost upper tail-coverts being steel-blue; tail brownish black, glossed with dark greenish steel-blue, the middle feathers without any white spot on the inner web, the next two on each side with a small white spot on the inner web, and so on till the last, which has a very large white spot; under surface of body fulvous white, the shaft of each feather strongly marked with brown, these shaft-stripes being very small on the throat and cheeks; the sides of the body washed

with pale sienna; under tail-coverts white, with very distinct shaft-stripes: "bill black; feet dark brown; iris brown" (*Shelley*). Total length 7·8 inches, culmen 0·35, wing 5·1, tail 4·1, tarsus 0·6.

The *adult female* resembles the male in colour, but is a trifle smaller, and less richly coloured on the head and rump. Total length 6·5 inches, culmen 0·35, wing 4·85, tail 3·7, tarsus 0·6.

The females and young birds are paler underneath, and there is less of the fulvous tinge which is seen in the old males.

Young. Head dark brownish sienna, very pale on the sides of the neck, the base of the feathers conspicuously showing, so that a quantity of blue-black diamond-shaped marks appear on the head; back and scapulars steel-blue, with the white edgings to the feathers showing conspicuously on the upper part of the back; wing-coverts blackish brown, edged at the tip with pale sienna; quills blackish brown, glossed with deep greenish steel-blue, the secondaries tipped with pale sienna; rump pale sienna, the white edging to the rump not very distinct, the shafts of all the feathers clearly defined; the blue upper tail-coverts edged with sienna; tail blackish brown, glossed above with deep greenish steel-blue, the outer feathers not very long, but having the white spot on the inner web very large, as in the adult, decreasing in size as it approaches the two centre feathers, which are unspotted; under surface of the body white tinged with fulvous, deepest on the flanks and abdomen; the shafts of the feathers very broad and plain, but thicker and not giving such a striped appearance in the adult; bill dark brown; legs flesh-colour.

Hab. South Africa, throughout the Cape Colony to Natal, the Transvaal, and Matabele Land. On the western side of the continent in Damara Land and Mossamedes.

This fine Swallow, as far as we yet know, is peculiar to the South-African region, and is easily distinguished from all the other rufous-rumped species of the genus *Hirundo* by its rufous head. The only other species which exhibits this character is *H. puella*, a much smaller bird with very broad streaks on the under surface. It appears to visit the Cape Colony from August till May, but where it goes to during the other months of the year has not been discovered.

Mr. E. L. Layard says that it arrives in the western part of the Cape Colony about the end of August or the beginning of September, but is somewhat irregular as regards its advent. Thus, in 1868 he observed the first at Uitkek, near Cape Town, on the 29th of August, but in the succeeding year the first bird was noticed by him at Green Point, near Cape Town, on the 19th of September, and Mr. Atmore saw it at George for the first time on the previous day. Victorin records it from the Knysna district as occurring from September to March, and he believes that it remains there till April. The late Dr. Bradshaw informed us that it was scarce along the Orange River, but plentiful further south in the Colony; he found it nesting at Renhardt, a village seventy miles south of the Orange River.

The dislike entertained by the inhabitants of South Africa to the slaughter of this bird doubtless accounts for its rarity in collections at home, and the only specimen we have seen from the eastern districts of the Cape Colony is one in the British Museum,

obtained by Capt. Trevelyan at Kingwilliamstown. Dr. Holub records it from the Orange Free State.

In Natal, according to Captain Shelley, it is very common, arriving, as we are informed by Mr. Thomas Ayres, in October or November, and leaving again in March or April. We have received many specimens from Mr. T. L. Ayres, who procured them in the neighbourhood of Pinetown. Majors Butler and Feilden and Captain Reid state that near Newcastle it arrived rather later than *H. albigularis*, being seen on the 22nd of October, when it became very abundant and nested.

Mr. Thomas Ayres has also met with the species in the Transvaal, near Potchefstroom, and also in the Lydenburg district, and the late Mr. Frank Oates procured a specimen at Tati, in the Matabele country, in October. Dr. Holub states that it occurs throughout Bechuana Land as far as the Zambesi; and Mr. Ayres saw it in Mashoona Land in September, October, and December, but procured no specimens.

On the western side of the South-African region, Senhor Anchieta has forwarded it from Huilla and the Coroca River in Mossamedes, but did not meet with it during his sojourn on the Cunene River. The late C. J. Andersson, however, procured it in Damara Land, where, he says, it is not very common, usually arriving later than *Hirundo dimidiata*.

Lefebvre has stated that he met with the species in Abyssinia near Adowa; but we agree with the late Baron von Heuglin that its actual occurrence is extremely doubtful.

Mr. Layard gives the following notes on the habits of this species:—"This is the household Swallow of the colony, breeding freely about the houses and in the country, often selecting the usual living-room of the family. In the city this familiarity is not permitted, on account of the dirt made by the birds; but the Boer fixes up a board under the nest, to prevent the worst fouling, and considers that the rest is atoned for by the destruction of the myriads of flies, of which his little favourites rid him during the season of their stay. And only those who have sojourned in a Boer's house can estimate the plague of flies that infest it: they swarm on "bed and board;" they pollute the food and drink; chairs, tables, walls, everything is blackened by them. No wonder, then, that the Swallow is a welcome guest, and that to rob his nest is to get into the bad books of every member of the family.

"As you sit at meals, the graceful bird hawks over the table, and snatches the flies from the walls and ceiling; nor is this the only service he renders, for, sitting on the top of the window or door (always left open for his accommodation), he pours out a short but lively song, which enlivens the dreary solitude and silence of the lone homestead.

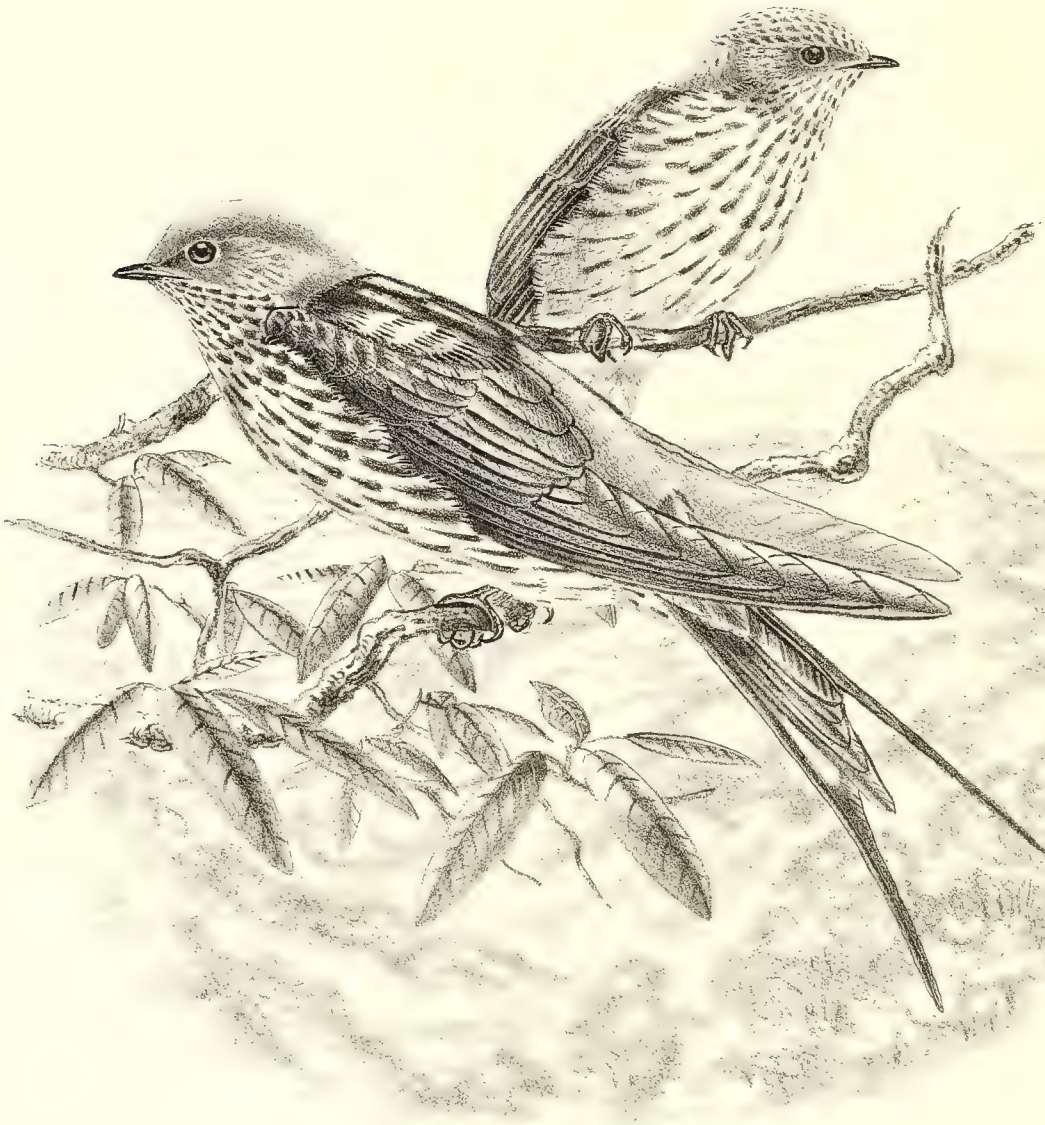
"The nest of this species is always attached to the underside of the place chosen, and is composed of little pellets of mud, like that of the English Swallow. In shape it resembles a gourd with a long neck, cut through longitudinally and glued up by the edges to the ceiling. The eggs are four or five and pure white: axis, 10‴; diam. 6‴.

"The Rev. John Fry, of Rondebosch, once related to us a singular instance of the reasoning powers of this Swallow. The tube of a nest in his bath-room fell down, and was not replaced by the old birds, who had brought up their young, till within a few

days of their flight, when one, more venturesome than his brothers and sisters, crept to the edge of the nest and fell over. After vainly trying to replace their dead offspring, the disconsolate parents, although their nesting was nearly over, repaired the broken tube to prevent a recurrence of the catastrophe."

"In Damara Land," writes Mr. Andersson, "this Swallow courts the society and neighbourhood of man, and, where permitted, will unhesitatingly enter his dwellings and construct its nest and rear its young in the midst of the household duties of the family. The nest is built of clay, and at first resembles in shape that of *Hirundo rustica*; but gradually the hollow bowl is narrowed into a tube of some extent. If the nest be destroyed at this stage, the poor bird at once sets about repairing the damage, but generally contents itself with rebuilding the dome, to which a narrow entrance is added. I have known a pair of these Swallows reconstruct their nest three times in one season, the female depositing a nearly full complement of eggs on each occasion. At the Cape this species commences its incubation towards the latter end of September or early in October, but in Damara Land it is somewhat later. The eggs are four or five in number, of a pure white, dotted over with minute brown spots."

The descriptions are taken from birds in the British Museum. The figures in the Plate, which represent a fully adult and a somewhat younger bird, are from birds in Captain Shelley's collection.



Mintern Bros. imp.

HIRUNDO PUELLA

HIRUNDO PUELLA, *Temm. & Schl.*

SMALLER STRIPE-BREASTED SWALLOW.

Hirundo puella, Temm. & Schl. in Faun. Japon. Aves, p. 33 (1842); Heugl. Orn. N.O.-Afr. i. p. 169 (1869); Gray, Hand-l. B. i. p. 69, no. 797 (1869); Finsch & Hartl. Orn. Ostafr. p. 160 (1870); Sharpe, P. Z. S. 1870, p. 319; id. Ibis, 1870, p. 479; Blanf. Geol. & Zool. Abyss. p. 346 (1870); Finsch, Trans. Z. S. vii. p. 218 (1870); Sharpe, Cat. Afr. B. p. 47, no. 441 (1871); Layard, Ibis, 1871, p. 229; Shelley & Buckley, Ibis, 1872, p. 288; Antin. & Salvad. Viagg. Bogos, p. 73 (1873); Sharpe, P. Z. S. 1873, p. 713; Ussher, Ibis, 1874, p. 63; Reichen. Corr. Afrik. Gesellsch. 1875, p. 178; Sharpe & Bouv. Bull. Soc. Zool. France, i. p. 38 (1876); Reichen. J. f. O. 1887, p. 21; Cab. J. f. O. 1878, p. 222; Fischer & Reichen. t. c. p. 257; Fischer, t. c. p. 280; id. J. f. O. 1879, p. 344; Sharpe, in Oates's Matabele Land, App. p. 311 (1881); Shelley, P. Z. S. 1881, p. 565; Bocage, Orn. Angola, p. 184 (1881); Shelley, Ibis, 1882, p. 260; Sharpe, ed. Layard's B. S. Afr. pp. 373, 841 (1882); Salvad. Ann. Mus. Civ. Genov. (2) p. 121 (1884); Fischer, Zeitschr. ges. Orn. i. p. 357 (1884); Sharpe, Cat. Birds in Brit. Mus. x. p. 154 (1885); Fischer, J. f. O. 1885, p. 128; Reichen. J. f. O. 1887, p. 62; Salvad. Ann. Mus. Civ. Genov. (2) vi. p. 232 (1888).

Hirundo abyssinica, Guér. Rev. Zool. 1843, p. 322; id. in Ferr. et Gal. Voy. en Abyss. iii. p. 240, t. 10 (1847); Des Murs in Lefebvr. Voy. Abyss., Zool. p. 77 (1845); Gray, Gen. B. i. p. 58 (1845); Bp. Consp. i. p. 340 (1850); Hartl. J. f. O. 1853, p. 399, 1855, p. 360; id. Orn. Westafr. p. 28 (1857); id. J. f. O. 1861, p. 103; Kirk, Ibis, 1864, p. 320.

Cecropis striolata, Rüpp. Syst. Uebers. p. 18, t. 6 (1845).

Hirundo striolata, Gray, Cat. Fiss. Brit. Mus. p. 23 (1848); Gordon, Contr. Orn. 1849, p. 4; Horsf. & Moore, Cat. Birds Mus. E. I. Co. i. p. 94 (1854).

Hirundo korthalsi, Bp. Consp. i. p. 340 (1850); Gray, Hand-l. B. i. p. 69, no. 800 (1869).

Cecropis abyssinica, Cass. Cat. Hirund. Mus. Phil. Acad. p. 3 (1853); Brehm, Reise nach Habesch, p. 209 (1863).

Hirundo capensis, A. E. Brehm, J. f. O. 1855, p. 492.

H. uropygio rufo: pileo rufo: subtus latè nigro striolata.

Hab. in regione Ethiopicâ fere totâ.

Adult. Head and back of neck pale sienna: back and scapulars bright steel-blue [illegible] dull

steel-blue; lower part of the back and rump deep sienna; upper tail-coverts black, sometimes with reddish ends; quills brownish black glossed with dull greenish blue; tail-feathers brownish black, glossed above with greenish steel-blue, all the feathers except the centre ones having a large white spot on the inner web; underneath fulvous white, profusely marked with broad longitudinal stripes of dark brown; under tail-coverts white with rufous streaks; under wing-coverts deeper fulvous; bill black; feet dark brown: "iris umber" (*J. S. Jameson*). Total length 7·8 inches, culmen 0·3, wing 4·2, tail 4·8, tarsus 0·5.

Young (type of *H. korthalsi*, Bp.). General colour above dull blue-black; wing-coverts and quills dusky blackish with a slight gloss of blue-black, all the coverts and quills with an obsolete tip of sandy rufous, much broader on the inner secondaries; lower back and rump pale rufous; upper tail-coverts blue-black, with sandy rufous tips; tail-feathers blackish, with a gloss of blue-black, the outer feathers only a little elongated, the two outermost with a long patch of white on the inner web; crown of head dusky blackish, with sandy margins to all the feathers; nape, hind neck, and sides of neck pale sandy rufous; lores ashy; sides of face and ear-coverts dull sandy rufous; cheeks and under surface of body whitish, broadly streaked with dusky blackish on the throat and breast, the streaks becoming much narrower on the abdomen and being absent on the under tail-coverts, which are entirely white; flanks and sides of body washed with pale sandy rufous; under wing-coverts and axillaries uniform pale sandy rufous, the small coverts near the edge of the wing mottled with blackish bases; quills dusky below, more ashy along the inner web. Total length 5 inches, culmen 0·3, wing 3·85, tail 2·2, tarsus 0·45 (*Mus Lugd.*).

Hab. South-eastern Africa, extending to the Zambesi on the east and to Benguela and the Congo on the west. Throughout Eastern Africa to Abyssinia, reoccurring on the Gold Coast.

Young birds can always be told by the want of the long outer tail-feathers, the rufous tips to the wing-coverts and inner secondaries, the remains of rufous margins to the dorsal feathers, and the distinct rufous tips to the upper tail-coverts; the head is also blackish with tawny rufous edges to the feathers; the streaks on the under surface are also more dusky and less distinct.

The following are the measurements of some of the specimens in the British Museum:—

		Total length. in.	Wing. in.	Tail. in.
a. Ad.	Cape Coast (*Dr. Gordon*)	5·7	4·0	2·85
b. Ad.	„ (*H. T. Ussher*)	6·1	3·95	3·3
c. Ad.	„ „	5·9	3·9	2·9
d. Ad.	„ (*G. E. Shelley*)	5·9	3·9	2·9
e. Ad.	„ „	6·7	3·9	3·9
f. ♂ ad.	„ „	6·0	4·0	3·2
g. Ad.	„ (*T. E. Buckley*)	6·0	3·85	3·2
h. Ad.	Landana, Congo (*L. Petit*)	6·5	4·15	3·6
i. ♂ ad.	„ „ „	6·2	4·05	3·45
j. Ad.	Kingwilliamstown (*H. Trevelyan*)	5·5	4·15	2·3
k. ♂ ad.	Pinetown, Natal (*T. L. Ayres*)	6·0	4·2	2·15
l. ♂ ad.	Durban, Natal „	6·8	4·35	3·85
m. Ad.	Natal	7·3	4·15	4·65
n. Ad.	Natal (*Mus. Jardine*)	7·0	4·25	3·7

		Total length. in.	Wing. in.	Tail. in.
o. Ad.	Tati (*F. Oates*)	6·8	4·15	3·8
p. Ad.	„ „	6·3	4·2	3·1
q. Ad.	Shupanga (*Sir J. Kirk*)	6·0	4·15	3·1
r. Ad.	Kitui (*J. Hildebrandt*)	7·6	4·25	5·85
s. ♀ ad.	Mombasa (*J. Hildebrandt*)	6·0	4·05	3·4
t. Ad.	Mombasa (*T. Wakefield*)	6·5	4·0	3·0
u. Ad.	Abyssinia	6·3	4·2	3·25
v. ♀ ad.	Dongolo, Tigrè (*W. T. Blanford*)	5·8	4·1	3·1
w. ♂ ad.	Rayrayguddy (*W. Jesse*)	7·0	4·25	3·8
x. Ad.	„ „	6·0	4·1	2·8
y. ♂ ad.	„ „	7·0	4·2	3·85

As will be seen by the above measurements, there is great difference in the length of tail-feathers exhibited by the series in the British Museum, and in some specimens the long tail-feathers are so produced and so narrow as almost to equal in extent the remarkable plumes of the Wire-tailed Swallow (*Hirundo smithii*). This attenuation and elongation of the outer tail-feathers appears to be a sign of age, and the character is not confined to specimens from any one locality. Those from the Gold Coast seem always to have rather shorter tails and also to have more rufous on the sides of the body and under wing-coverts.

Although of the same form as *Hirundo cucullata*, this species is conspicuously smaller in bulk, richer in colour, and much more broadly and plentifully streaked with black on the underparts.

It was first observed in South-eastern Africa by Dr. Atherstone, near Grahamstown, and Mr. E. L. Layard also saw the species in an open space near the fort at Committee's Drift in the eastern district of the Cape Colony. Here, says Mr. Layard, "it was in large flocks, perching freely on the ground, and we were assured by the hotel-keeper that it had bred there; this we could easily believe, as we shot both old and young birds." Major H. Trevelyan has presented to the British Museum a specimen shot near Kingwilliamstown.

We have received several specimens from Natal, and Mr. T. L. Ayres has sent adults collected in October, and a young bird procured on the 14th of March near Pinetown. It does not seem to have been met with in the Transvaal; but the late Mr. Frank Oates obtained two adult birds at Tati, in Matabele Land, on the 4th and 5th of October. Mr. Jameson also obtained the present species on the Umvuli River on the 1st of October. He says:—"This Swallow, which had just arrived in small parties, was immediately pairing off and commencing to build, but was by no means plentiful." Specimens procured by Sir John Kirk at Shupanga, on the Shirè River, are in the British Museum. It was observed by him on the Zambesi during two successive seasons, building in the months of December and January in the house at Shupanga; it was not seen elsewhere, and was absent during the dry season.

The late Mr. Monteiro procured a specimen in Benguela, and Anchieta has met with the species on the Coroca River, at Caconda, and at Huilla in Mossamedes.

On the Lower Congo, Petit has found it at Landana in January and February, and Dr. Falkenstein on the Loango coast. It has not been included in any of the lists of birds from the Upper Congo regions.

The first record of its occurrence in Eastern Africa appears to have been in 1873, when the Rev. T. Wakefield found the species near Mombasa. It seems to be plentiful there, and since that date instances of its capture have been multiplied. Dr. Fischer writes:—"I found *H. puella* at Mombasa in December, where it appears to breed during the dry season, viz. from December to April. During my residence here in the year 1877, from May to August, I did not notice the species at Mombasa, and it therefore seems to go somewhere else during the rainy season. They were in the habit of flying round the Arab houses after the manner of our European Swallow, were very tame, and often settled in the interior of the houses, the porches of which afforded them good nesting-places. I even found a completely finished nest under the cornice of a balcony, from which it extended in a slanting direction over the ceiling of the room. Its length was 21 centimetres, and at the base about 30 centimetres, so that the entrance was 4 centimetres in diameter. It was composed of little nodules of clay, and had no thicker lining inside. This Swallow utters sometimes a soft 'zizi,' at others a harsh 'terr.' The males have also a short song, which reminds one of that of Kersten's Weaver-bird (*Sycobrotus kersteni*), but is less of a warble." Dr. Fischer also met with the species at Pangani on the 1st of December, where it was again nesting in the porches of the Arab stone dwellings. On the 24th of April, at Nguruman, he found a colony of some thirty pairs on a steep wall of rock, at the foot of which a brook was flowing; the nests were cup-shaped and made of clay, some containing fresh eggs and others young birds. Near Maurui he saw this Swallow engaged in carrying little lumps of clay from the shores of the river. The eggs are white.

Dr. Hildebrandt sent specimens from Kitui in Ukamba, where he met with the species in June. He states that the name of the Swallow in Mombasa is 'Mbaimbáyu.' Dr. Fischer also procured specimens at Wito and Barawa, and on his last expedition he noticed the species at Msingissua in Usegua. Sir John Kirk has forwarded examples from Dar-es-Salaam, Malinda, and the Usambara Hills, and Dr. Fischer from Bagamoyo.

In Shoa it was procured by Sir W. C. Harris in January at Ankober. Antinori met with it at Ambo-Karra on the 9th of March, and Dr. Ragazzi also obtained a female at the Falls of Farré on the 19th of March.

During the Abyssinian Expedition, Mr. Blanford and Mr. Jesse met with it in Tigrè, procuring examples in April and May, at Senafé, Dongolo, and Rayrayguddy. Von Heuglin has published the following note:—

"I cannot say positively whether the Striped Abyssinian Swallow is a resident bird, but it certainly wanders to localities where it never breeds. We have met with it in different parts of Abyssinia northwards as far as Bogos in May, July, August, September,

and October, and other observers have found it in November and April. Its localities are between 3500 and 10,000 feet, and they are said to nest on rocks, like *H. filifera*. Brehm says, in his 'Reise nach dem abessinischen Küstenland' (Habesch, p. 209), that the present species is a *house* Swallow in both the districts where he saw it. I have never seen it upon or near human dwellings, neither on the banks of the Red Sea nor in the Eastern Soudan, and I describe the nests which I found in the Bogos country in hollows and clefts and under projecting rocks, which they resemble in colour. They were constructed of sand and earth, firmly cemented together probably by a kind of saliva of the builder. They resemble those of our House-Swallow in shape, but their sides are much less massive, and externally more smooth; sometimes the nest is quite round. I found no material at all for lining in the interior, and the nests have just the appearance of pottery.

"This bird is generally observed in families, either sitting on dry tree-tops, or circling about over cattle-pastures and rocks; we once met with a party near the snow-limit, sailing round high perpendicular cliffs. The voice of this species, like that of *H. senegalensis* and *H. melanocrissa*, is a very peculiar melancholy piping 'ter,' which is often repeated several times in succession."

In West Africa this Swallow appears to be confined to the Gold Coast districts. It was first noted near Cape Coast Castle by Dr. Gordon, whose specimen is now in the British Museum. Governor Pel procured it on the Rio Boutry, and a specimen from Ashantee was in the Gould collection; but since the acquisition of the latter by the British Museum, the bird in question has been transferred to the duplicates, as the locality is thoroughly untrustworthy. This supposed Ashantee collection was bought by Gould from a dealer, and the skins were all of the ordinary Gold Coast 'make,' and we have no doubt that they were an ordinary lot from the neighbourhood of Cape Coast Castle. On the Gold Coast, Captain Shelley found the species everywhere abundant in January and February; and Governor Ussher has given the following note:—

"Tolerably common in and about Cape Coast at certain seasons of the year. I did not observe it until February or March, but cannot positively assert that it is a regular migrant. A pair frequented the grounds of Government House at Cape Coast during the spring of 1871, building in a large stone-arched tank at the far end of the lawn. They appeared, in common with many African species, to be fond of sitting on the grass or gravel in the early morning. I have generally observed them in pairs, sometimes singly, but never in flocks."

Dr. Rochebrune has included this species in his 'Fauna of Senegambia,' and says it is decidedly common. No one else has ever met with the species in this part of West Africa, and the statement requires confirmation.

The descriptions are from specimens in the British Museum, and the figures in the Plate have been drawn from a very fine bird in the same.



C W W. del

Mintern Bros. imp

HIRUNDO RUFULA.

HIRUNDO RUFULA, *Temm.*

RED-RUMPED SWALLOW.

Hirundo daurica, Savi, Orn. Tosc. iii. p. 201 (1831, nec. L.); Selys Longch. Ibis, 1870, p. 453.

Hirundo alpestris (nec Pall.), Bp. Faun. Ital., Ucc. Intr. p. xxx (1832); Heugl. Orn. N.O.-Afr. i. p. 158 (1869); Borggr. Vogelf. Deutsch. p. 100 (1869); Blanf. Geol. & Zool. Abyss. p. 346 (1870).

Hirundo rufula, Temm. Man. iii. p. 298 (1835, syn. excl.); Werner, Atlas, Chelidones, pl. 1 *a*; Schl. & Susem. Vög. Eur. vi. Taf. 1. fig. 2 (c. 1839); Gray, Gen. B. i. p. 58 (1845); Schl. Rev. Crit. pp. xviii, 41 (1844); Bp. Consp. i. p. 339 (1850); Brehm, J. f. O. 1853, p. 453; Tristr. Ibis, 1859, p. 27; Linderm. Vög. Griechenl. p. 119; Simpson, Ibis, 1860, p. 289; Blasius, Nachtr. Naum. Vög. Deutschl. xiii. p. 209, Taf. 383. fig. 4 (1860); Dubois, Ois. Eur. pl. 34 (c. 1862); Blasius, Ibis, 1862, p. 65; Gray, Cat. Brit. B. p. 33 (1863); Wright, Ibis, 1864, pp. 42, 57; Giglioli, Ibis, 1865, p. 51; Tristr. t. c. p. 79; id. Ibis, 1867, p. 362; Degl. et Gerbe, Orn. Eur. i. p. 590 (1867); Doderl. Avif. Sicil. p. 144 (1869); Gray, Hand-l. B. i. p. 69, no. 808 (1869); Saunders, Ibis, 1869, p. 396; Selys Longch. Ibis, 1870, p. 453; Sharpe, P. Z. S. 1870, p. 314; Salvad. Faun. Ital., Ucc. p. 53 (1871); Shelley, B. Egypt, p. 122 (1872); Dresser, B. Eur. iii. p. 187, pl. 161 (1875); Lilford, Ibis, 1875, p. 16; Cordeaux, t. c. p. 184; Dresser, Ibis, 1876, p. 188; Blanf. East. Persia, ii. p. 215 (1876); Wardlaw Ramsay, Ibis, 1880, p. 48; Giglioli, Avif. Ital. p. 64 (1881); id. Ibis, 1881, p. 192; Scully, t. c. p. 427; B. O. U. List Brit. B. p. 43 (1883); Seebohm, Ibis, 1883, p. 169; Sharpe, Cat. Birds in Brit. Mus. x. p. 156 (1885); id. Ibis, 1886, p. 497; Salvad. Elench. Ucc. Ital. p. 83 (1887).

Lillia rufula, Boie, J. f. O. 1838, p. 364.

Hirundo capensis (nec Gm.), Duraz. Ucc. Lig. p. 14 (1840).

Cecropis rufula, Boie, Isis, 1844, p. 174; Cass. Cat. Hirund. Mus. Philad. Acad p. 4 (1853); Vierth. Naum. 1855, p. 472; Gould, B. Asia, i. pl. 27 (1868).

Cecropis alpestris (nec Pall.), Heugl. Syst. Uebers. p. 16 (1856); Severtz. Turkest Jevotn. p. 67 (1873).

Hirundo (*Cecropis*) *rufula*, Jaub. et Barth.-Lap. Rich. Orn. p. 308, pl. 19. fig. 1 (1859).

Hirundo daurica (nec L.), Wright, Ibis, 1864, pp. 42, 57, & 1874, p. 233.

Hirundo nipalensis (nec Hodgs.), Biddulph, Ibis, 1881, p. 47.

Hirundo erythropygia (nec Sykes), Scully, Ibis, 1881, p. 47, note.
Hirundo scullii, Seebohm, Ibis, 1883, p. 168; Sharpe, Cat. Birds in Brit. Mus. x. p. 158 (1885).

H. uropygio rufo, postice albicante, fasciam exhibente; pileo dorsoque concoloribus: torque cervicali rufâ.

Hab. in subregione Mediterraneo-Persicâ usque ad montes Himalayenses et Asiam Centralem.

Adult male. General colour above glossy purplish blue, with white streaks on the back where the white bases to the feathers show through; wing-coverts like the back; bastard-wing feathers, primary-coverts, and quills blackish, externally washed with dull steel-blue; rump pale cinnamon-rufous, verging into creamy white on the upper tail-coverts, the longer ones of which are purplish blue with pale cinnamon-buff bases; tail-feathers blackish glossed with dull blue; crown of head purplish blue, forming a cap, which is separated from the mantle by the cinnamon-coloured sides of the neck, which converge from behind the eye to the nape, where they form a collar; base of forehead and a narrow line over the eye cinnamon-rufous; cheeks and ear-coverts pale sandy buff, the lores mixed with dusky plumes; entire under surface of body pale cinnamon-buff, a little deeper on the fore neck, breast, and flanks; the throat very minutely, and the rest of the body a little more distinctly, striated with narrow dusky shaft-lines; sides of upper breast purplish blue; thighs and under tail-coverts creamy whitish, the longer coverts blue-black with creamy white bases; axillaries and under wing-coverts pale sandy buff, the coverts near the edge of the wing with blackish shaft-lines; quills dusky below, paler along the edge of the inner web. Total length 7·8 inches, culmen 0·35, wing 4·8, tail 4·15, tarsus 0·5.

Adult female. Exactly like the male in colour. Total length 7·5 inches, culmen 0·35, wing 4·7, tail 3·85, tarsus 0·55.

Obs. In many specimens the crown of the head appears as if connected with the mantle by a few purplish-blue feathers; this is, however, due to the faulty preparation of the skin, as in properly preserved examples the collar on the hind neck is perfect. We have seen only one young bird which has also this partial connexion between the crown and mantle, but we do not consider it to be simply a sign of immaturity; for in fact many of the young birds have as well marked a collar as the finest of the adults.

Young. Much duller in colour than the adult, being blackish glossed with steel-blue, the rufous colour on the neck and rump very much paler; wing-coverts and secondaries tipped with pale rufous; beneath paler than in the adult, the throat and abdomen whitish, the fore neck rufescent; the throat and breast with tolerably distinct dusky shaft-lines; axillaries and under wing-coverts pale cinnamon, rather deeper than in the adult. Total length 6·8 inches, wing 4·8, tail 3·2, tarsus 0·55.

The race which Mr. Seebohm separated as *H. scullii* from Nepal differs in no respect from true *H. rufula* except by its smaller size, a distinction which seems to be fairly constant, but one which we now hardly think requires the separation of the eastern birds under a subspecific title. The following are the measurements of the wing in the series in the British Museum, and we

fully expect that connecting-links between the smallest *H. rufula* and the largest *H. scullii* will be discovered:—

a. H. rufula.

		♂. in.	♀. in.	Sex unknown. in.
a.	Marocco . . .	...	...	4·7
b.	Genoa	...	...	4·8
c, d, e.	Cyprus	4·75		
f.	Greece	4·85		
g.	Smyrna . . .	...	4·75	
h, i.	„ . . .	...	4·7	
k, l.	„ . . .	4·85		
m.	„ . . .	4·9		
n.	„ . . .	...	...	4·6
o, p.	Tiberias	4·65		
q.	Nazareth . . .	...	4·7	
r.	Mt. Tabor . . .	4·6		
s.	Mt. Carmel . .	...	4·8	
t.	Banias	4·8		
u.	Wady El Beerha .	4·8		
v, w.	Bushire	4·8	4·6	
x.	Baluchistan . .	4·7		

β. H. scullii.

		Sex unknown. in.
a.	Pushut	4·45
b.	„	4·35
c.	Byan Kheyl	4·5
d.	Nepal	4·4
e.	„	4·45

Hab. Countries of the Mediterranean from the South of France and Italy, Algeria and Marocco eastwards to Greece and Asia Minor, Palestine, and Egypt, extending southwards to Abyssinia, and eastwards through Southern Persia to Turkestan, Afghanistan, and the Himalayas as far as Nepal.

This pretty Swallow is an inhabitant of South-eastern Europe and the countries bordering the Mediterranean Sea, whence it extends eastwards to the Himalayas and Turkestan, and southwards to Abyssinia.

It has occurred once in Heligoland, a specimen obtained on the 31st of May, 1855, being in the famous collection of Mr. Gätke. Its occurrence in England has also been noted, one having been reported as seen at Penzance by the late Mr. Rodd (*cf.* B. O. U. List Br. B. p. 43).

In the Mediterranean countries this Swallow has not been recorded from Spain, or from Corsica or Sardinia. MM. Jaubert and Barthélemy-Lapommeraye record the capture of several specimens in the South of France.

Count Salvadori's note on the species in Italy is as follows:—"A rare bird, of which specimens are captured in certain years in the Bari district, in Sicily, and in Liguria; it is also said to be found in Malta, in Tuscany, and in Piedmont. The nesting of the species on the old temple of Segesta in Sicily has still to be verified." Professor Giglioli writes:—"A rarity with us, and occurring less frequently at Genoa and at Bari, as far as my information goes. On the 25th of March, 1877, the first Swallow I saw

flying over the Arno in Florence, between S. Trinità bridge and Ponte Vecchio, was a specimen of this species, its reddish rump glowing conspicuously in the sunlight. I saw it again the next day, together with *Chelidon urbica*; it afterwards disappeared. Our collectien possesses two specimens, a male shot near Genoa in May 1859, and a female shot at Bari in August 1874. I believe that a few couples breed with us." In his paper on the birds of Malta and Gozo, Mr. C. A. Wright observes :—" I was long of opinion it would turn up in Malta ; but it was not until 5th April, 1862, that I had the pleasure of seeing it. Out shooting with Dr. Leith Adams, at the Salini, we distinctly recognized three individuals, of which Dr. Adams succeeded in shooting one. We noticed at the same time *H. rustica* and *H. riparia*, of which I shot two or three. A strong easterly wind was blowing; indeed, easterly winds had prevailed for some days, to which was owing the presence of *H. rufula* so far to the westward of its usual habitat. A day or two subsequently, Dr. Adams obtained another specimen from the same place, and saw several others. There are two specimens in the Malta University, evidently taken many years ago, but no locality or time is given. Another example of this rare visitor was taken in April 1870."

Professor Doderlein states that it is not uncommon near Messina, and Lord Lilford believes that he saw the species near Catania on the 24th of March.

In Algeria, Loche states that it is of very rare occurrence, and Mr. Dresser is inclined to doubt the capture of the species in that country ; but there is no question that Loche had grounds for his assertion, as it is undoubtedly found in Marocco. A specimen was presented to the British Museum in 1886 by Mr. Kirby Green, C.M.G., who has given us the accompanying note :—" A male bird was killed at M'tourga on the spurs of the Atlas, close to the place where Mr. Herbert White shot the *Geronticus*. I observed this Swallow in the villages higher up, also along the coast of Mogador to half-way between Rabat and Tangier. It was nowhere very numerous."

With regard to the species in Greece, we borrow from Mr. Dresser's 'Birds of Europe' the translation of Dr. Krüper's account :—" It is found in Acarnania, from the extreme point of the Vorassova Mountains opposite Patras, along the mountain-range to the Phidaris (Euenos) river, from there along the Zygos Mountains to the Aspropotamos (Acheloos); to the north near the harbour of Astaco, in the Klissura, near Vrachori, and four hours' walk from there on the road between Prostova and Carpenisi. We further met with it on the Parnassus, near the villages of Arachova, Agorian, Gravia, Mariolates, Dadi, and most commonly near Velitza. Doubtless it ranges further north in Turkey, perhaps as far as Dalmatia. It certainly inhabits also the southern portion of Greece and the Peloponnesus. It doubtless arrives about the same time in Acarnania as *Hirundo rustica* and *H. urbica*. Last year I saw the first *H. rustica* on the 20th March, and the first *H. urbica* and *H. rufula* on the 26th of that month. They probably leave in October. I frequently saw them late in September on the Parnassus." Mr. Seebohm, however, informs us that, according to his experience, it arrives a full month later than the Martin and Chimney-Swallow.

Mr. W. H. Hudleston, in his interesting account of an expedition to Mesolonghi and Southern Ætolia, writes:—"But the greatest curiosity of all was to be seen under a large flat slab which projected enough to afford convenient shelter during a shower of rain. This was a nest of *H. rufula*, which had been broken at one end, and consequently abandoned by the bird. Meanwhile a Nuthatch had come and repaired the damage, possibly with the idea of appropriating the nest. The difference of the workmanship, and to a certain extent in the materials, was very apparent when the two were in juxtaposition. In shape the nest of *H. rufula* is so different from that of any other European bird, that this proceeding on the part of the Nuthatch was still more extraordinary."

Numerous specimens collected by Dr. Krüper near Smyrna are in the British Museum, and Lord Lilford has recently presented to the same institution three specimens obtained by Dr. Guillemard in Cyprus. In Palestine, writes Canon Tristram, "this handsome Swallow returns at the end of March; plentiful everywhere, but most numerous in the lower and warmer parts of the country. Though feeding in flocks, I never knew this bird to breed in company; and very rarely were two nests to be found in one cave. The nest is a beautiful structure, composed of the same materials as that of the House-Martin, but is invariably attached to the flat surface of the underside of the roof of a cave or vault. . . . . A favourite breeding-place of *H. rufula* is under the arches of the Monastery on Mount Carmel. The eggs are four in number, pure white, considerably larger than those of the House-Martin, and flatter at the small end."

Capt. Shelley found the species throughout Egypt and Nubia, but it is of rare occurrence. "Towards the end of March I constantly saw a pair flying over a marsh near Damietta, and on the 30th of that month obtained one of them." Dr. A. Brehm states that he saw one only in Nubia, near Ibrim, on the 3rd of April, and met with it on another occasion, in company with our Chimney-Swallow, in Egypt. The late Baron von Heuglin says that he saw the species in the same localities, near Der, and on the 9th of April near Anaho, on the western slopes of the Abyssinian Highlands. Mr. W. T. Blanford obtained two specimens at Koomayli in February.

We have received a pair of specimens from Mr. A. J. V. Palmer, collected at Bushire, where he also found the eggs. Mr. Blanford writes:—"I only met with this Swallow in Southern Persia and part of Beluchistan. It was more common near Shiraz than elsewhere, and I never met with it farther to the north."

According to Dr. Severtzoff it breeds throughout Turkestan, at an altitude of from 4000 to 6000 feet, and it also occurs in Afghanistan, where the late Dr. Griffith procured two specimens near Pushut, and Capt. Wardlaw-Ramsay also met with the species at Byan Kheyl. These all belong to the smaller eastern race (*Hirundo scullii* of Seebohm) of which Colonel Biddulph shot two specimens at Gilgit on the 16th of May, among a large number of *Chelidon cashmiriensis*. Dr. Scully says that "it is a summer visitor to Gilgit, but never appears to be common." The same gentleman has also procured the species in Nepal, whence came Mr. Seebohm's types of *H. scullii*.

In 1870 we were responsible for the statement that *H. rufula* went to Dauuria.

This we made on the faith of a specimen purchased from the Maison Verreaux. Fortunately the specimen passed into the collection of Mr. H. E. Dresser, who found from the original Russian label still on the specimen that it had been shot near Karatau in Turkestan, which is probably its furthest eastern limit in Central Asia.

Mr. Seebohm contributed the following note to Mr. Dresser's 'Birds of Europe':—"I found *Hirundo rufula* breeding both at Nymphion, east of Smyrna, and in the Parnassus. Both in Asia Minor and in Greece it is a summer visitor only, arriving early in April, at least a month later than its congeners *Hirundo rustica* and *H. urbica*. Fresh-laid eggs may be obtained from the middle of May to the middle of June. I did not meet with any evidence of its breeding a second time, except when the first nest had been destroyed or disturbed before the eggs were hatched. I have a young bird in full plumage of the first year, shot on the 30th of July. During the breeding-season it frequents the warm sheltered valleys in the highest parts of the vine-regions. We never met with it so high up as the pine-regions. On the wing *Hirundo rufula* is quite as much at home as *H. rustica* or *H. urbica*, and may not unfrequently be seen hawking for flies in company with both these species. It may, however, be easily distinguished from those birds at some distance, as it possesses the long forked tail of the one in addition to the white rump of the other. It may also be distinguished by its note, which resembles that of *H. rustica*, but may be described as a low *whit* compared with the loud *whet* of that bird. The limestone crags of the Parnassus and of Asia Minor east of Smyrna abound in caves, on the roofs of which this bird builds it curious nest; but so far as my observation goes it never breeds in colonies. The nest is built of mud, and is very similar to that of *Hirundo urbica*, with the addition of a funnel at the top made of the same material, the entrance to which is slightly bent downward, so that the whole structure reminds one of a chemist's retort. It is lined with dry grass and feathers. The eggs, from four to five in number, are pure white, a size smaller than those of *Hirundo urbica*, and less pointed at the smaller end than the eggs of that species usually are, measuring from $\frac{33}{40}$ by $\frac{23}{40}$ to $\frac{31}{40}$ by $\frac{22}{40}$ inch. From the similarity of this bird to *H. rustica* one might have expected the egg to be spotted; but whereas the eggs of *H. rustica* and *Cotyle rupestris* may always be seen in the nest, those of *H. rufula*, *H. urbica*, and *C. riparia* never can be. In this family the colouring of the egg seems to bear no relation to generic distinction as it does amongst the Warblers, but would seem to be entirely dependent on the greater or less concealment afforded by the construction and position of the nest. Both in the neighbourhood of Smyrna and in the Parnassus the bird is comparatively local and rare, but is much more abundant in Acarnania."

The figure in the Plate and the descriptions of this species have been taken from specimens in the British Museum.

GEOGRAPHICAL DISTRIBUTION

←→ Migratory.
←/→ Bird of passage.
←⊖→ Remains locally during the winter.
←Δ→ Transplanted.
←*→ Winter resident.

Δ Acclimatized.
◯ Permanent res
◯◯ Changing habi
~ Visitor.
≈ Accidental visi

	Nearctic Region.										Neotropical Region.							Palæarctic R				
	Arctic Sub-Region.		Cold Temperate Sub-Region.				Warm Temperate Sub-Region.				Antillean Sub-Region.	Central American Sub-Region.		Sub-Andean Sub-Region.	Amazonian Sub-Region.	Brazilian Sub-Region.	Patagonian Sub-Region.	Arctic Sub-Region.	Eurasian Sub-Region.			Mantchurian Sub-Region.
							Humid Province.		Arid Province.													
	Arctic Province.	Alaskan Arctic Province.	Hudsonian Province.	Canadian Province.	Sitkan Province.	Aleutian Province.	Appalachian Sub-Province.	Austro-Riparian Sub-Province.	Campestrian Sub-Province.	Sonoran Sub-Province.		Mexican Province.	Isthmian Province.						European Province.	Central Siberian Province.	East Siberian Province.	
19. *H. nigrorufa*	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
20. *H. smithii*	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
21. *H. griseopyga*	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
22. *H. cucullata*	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
23. *H. puella*	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
24. *H. rufula*	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

THE GENUS HIRUNDO (*continued*).

V Guest.

† Wanderer.

Rarely
Generally } nesting.
In colonies

	Ethiopian Region.										Indian Region.				Australian Region.						
rraneo-Asiatic ıb-Region.																					
Mediterraneo-Persic Province.	Mongolian Province.	Himalo-Caucasian Sub-Region.	Saharan Sub-Region.	Soudanese Sub-Region.	West-African Sub-Region.	Abyssinian Sub-Region.	East-African Sub-Region.	South-African Sub-Region.	Cape Province.	Natalese Province.	Cameronian Sub-Region.	Lemurian Sub-Region.	Indian Peninsular Sub-Region.	Indo-Malayan Sub-Region.	Himalo-Malayan Sub-Region.	Himalo-Chinese Sub-Region.	Celebean Sub-Region.	Moluccan Sub-Region.	Papuan Sub-Region.	Australian Sub-Region.	New-Zealand Sub-Region.	[illegible]	Hawaiian [illegible]
..	..	..	..	..	..	..	..	○															
..	..	..	..	○	○	○	○	..	..	○	..	..	○	○	○								
..	..	..	..	..	?○	..	?○	..	..	?○													
..	..	..	..	..	..	..	..	..															
..	..	..	..	..	○			..															
⊞	..	⊞	..	⟷	..	⊞																	

⊞ = Generally nesting.

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A MONOGRAPH OF THE HIRUNDINIDAE OR FAMIL
3 0112 010230651